

# thermokon®

HOME OF SENSOR TECHNOLOGY



# PRODUCTS

VALID FROM 1<sup>ST</sup> APRIL 2017



THE EFFECTIVE SENSOR MANUFACTURER FROM GERMANY



# THERMOKON AT A GLANCE



USE



SR06 LCD



JOY



thanos

EasySens®

airScan airConfig

Extension of the intelligent  
Wireless System EasySens®



New Company Headquarters  
since January 1, 2014



SMD Assembly Line



Former Company Headquarters  
in Mittenaar-Bicken

## » 2020

- 2017 **Company Anniversary** 30 Years Thermokon Sensortechnik GmbH
- 2016 **Premiere** of the new and innovative enclosure „USE“
- 2015 **Launch** of the new design room operating unit „JOY“
- 2015 **Launch** of the solar-powered room operating unit SR06 LCD
- 2015 **Investment** into a new SMD assembly line
- 2015 **Establishing** Thermokon Sensor Technology Nederland B.V., Netherlands
- 2014 **Establishing** Thermokon Norge AS, Norway
- 2013 **New Company Headquarters** in Mittenaar-Offenbach
- 2013 **Establishing** Thermokon Americas LP, USA
- 2013 **Establishing** Thermokon Sensortechnik Switzerland AG
- 2012 **A reason to celebrate:** 25 Years Thermokon Sensortechnik GmbH
- 2011 **Establishing** Thermokon Automation Equipment Co. Ltd., China
- 2011 **Launch of the** high-end touch room operating unit thanos

## » 2010

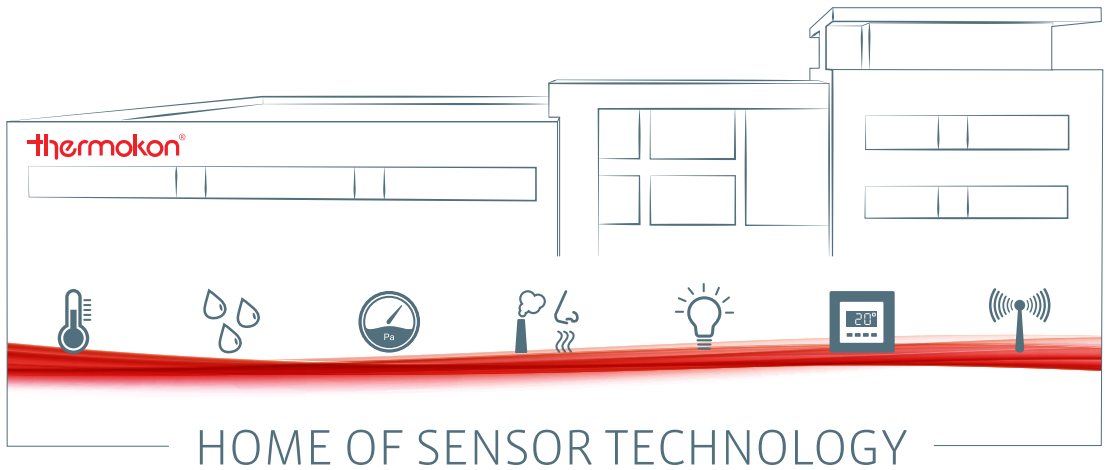
- 2009 **Extension** of the product portfolio to sensors with BACnet interface
- 2007 **Further extension** of the company building by 600 m<sup>2</sup>
- 2005 **Launch** of the design room operating unit WRF08
- 2005 **Extension** of the product portfolio to sensors with Modbus interface
- 2004 **Launch** of the innovative wireless sensor system EasySens®
- 2002 **Launch** of the surface mounted room operating unit WRF04
- 2002 **Establishing** Thermokon-Danelko Elektronik AB, Sweden
- 2002 **Anniversary** 15 Years Thermokon Sensortechnik GmbH
- 2000 **Further extension** of the company building to 2.000 m<sup>2</sup>

## » 2000

- 1998 **Establishing** Thermokon Components GmbH, Austria
- 1997 **Extension** of the company building in in Mittenaar-Bicken
- 1995 **First production** of humidity sensors
- 1995 **Extension** of the product portfolio to sensors with LON interface
- 1995 **First production** of mixed gas and brightness sensors
- 1995 **Launch** of a quality management system according to DIN EN ISO 9001
- 1994 **New company building** in Mittenaar-Bicken

## » 1990

- 1987 **Development and production** of temperature sensors for the heating industry
- 1987 **Company foundation** of Thermokon Sensortechnik GmbH by Harald Zygan



## FROM A SINGLE PRODUCT TO A SYSTEM SOLUTION

### » ENERGY-EFFICIENT HIGH-TECH PRODUCTS

What started with the foundation of Thermokon Sensortechnik GmbH by Harald Zygan in 1987 has evolved to a success story quickly: The initial specialization on temperature sensors for the boiler industry was soon followed by an extension of the portfolio to sensor solutions for the detection of relative humidity, air quality and brightness. Those products laid the foundation for energy-efficient products within our systems and solutions.

Nowadays, we are contributing actively to the sustainability of buildings as well as the reduction of CO2 emissions. When developing our high-tech products we pay especially attention to a lean and plug & play design so that our systems are "easy to install". Of course, a time and cost-saving configuration is considered as well.

### » CONTINUOUS GROWTH

Our growth to a Global Player involves a consequent optimization of our headquarters and included a new building in Mittenaar-Bicken in 1994. This building was continuously extended in the following years. In 2014 we moved our headquarters to a new location in Mittenaar-Offenbach.

A generous construction, latest technologies and ideal production conditions give us the flexibility and creativity for the development and production of advanced sensor solutions.



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**EasySens® | airConfig | airScan**  
**SmartACK**

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# INTEROPERABLE SYSTEM INTEGRATION

Intelligent building technology requires a communication between all components. When developing new solutions we take care that our products are compatible with all common BUS systems so to enable an easy interoperable system integration



## MODBUS

Since its development in the year 1979 the Modbus protocol had become a standard in the industrial communication and plays an important role as an application protocol for data transmission. As the Modbus TCP type, it had significantly advanced the Ethernet communication in the automation. The combination of manufacturer independent data visualization via Modbus and the universal network standard TCP/IP and the Ethernet enable the open exchange of process data.



## BACnet

The communication protocol BACnet, which is independent of manufacturers, is especially designed for applications in the building automation. The objective of BACnet is the allocation of uniform, non-committed standards for data communication. In Europe BACnet is represented by the BACnet Interest Group Europe (BIG-EU), the industrial association for the use of global BACnet standards according to ISO 16484-5. BACnet distinguishes itself by high transfer rates.



## LON

The idea of LON technology (Local Operating Network), a worldwide standardized communication and automation protocol, is the interoperability, a high application width and a comprehensive possibility of field applications enabling the realization of global building automation solutions. Data transmission is made directly from device to device. A central control system is not needed.

# COMPATIBILITY IS THE ASSET



## **KNX**

The KNX technology has established well as a worldwide standard for all applications in the field of home and building system technology – from energy management, HVAC applications or security systems via lighting and shutter control up to the operation of household appliances and audio/video solutions. KNX is based on the installation tool ETS which is independent of manufacturers and products. ETS is equipped with a full set of transmission media as well as a configuration mode enabling an overall use



## **digitalSTROM**

digitalSTROM networks all electrical devices in a household via the existing circuit lines and enables a new dimension of living comfort. From individual light changes up to more energy efficiency and security at home, there is almost nothing that cannot be easily and comfortably be controlled and automated with digitalSTROM. All necessary components can be mounted everywhere fast and clean. All applications can be controlled via switch or virtually via PC and smart phone. digitalSTROM is the future of your current – but can be used today already.



## **EasySens®**

The use of innovative technology makes it possible: The wireless EnOcean based system EasySens® enables a networked building automation – self-powered, intelligent and maintenance-free. Thus, EasySens® offers best possible flexibility for realizing individual requirements in new buildings and refurbishments.

» *The Effective Sensor Manufacturer  
for an Efficient Partnership*



## OUR EXPERTISE – YOUR SUCCESS

For 30 years, THERMOKON is recognized worldwide for leveraging standards in intelligent buildings with engineering, innovation and quality “Made in Germany”. Thanks to the development and production of sophisticated sensors and sensor systems we are creating an additional benefit for our customers all over the world. We focus on efficiency, sustainability and openness to new fields of technology as well as a close cooperation and thorough dialogue with our clients.

As a leader for innovation with a broad scope of applications we are continuously developing our portfolio further and offer decisive benefits with regards to product-related values, customized solutions and engineering. Our complete range of products is designed to energy-efficient buildings striving for an “A” classification according to DIN EN 15232.

### » LEADING FOR GOOD REASONS

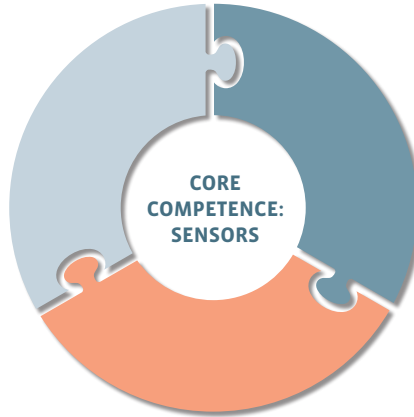
Made in Germany – Home in the world. With these goals in mind our highly motivated employees are working for your needs every day. Thanks to our success we are first choice for our partners:



- » Clear focus on the best possible benefit for customers
- » Solution-oriented thinking and action
- » Highest standards for technology and quality



**APPLICATION KNOW-HOW**



**PROCESS KNOW-HOW**

**TECHNOLOGY KNOW-HOW**

## QUALIFIED, RELIABLE, EFFICIENT

As the “Home of Sensor Technology” for building automation and HVAC Thermokon offers the essential knowledge to combine quality with efficiency to create customers’ benefit by innovative solutions. Your success is guaranteed by our expertise. Thanks to well-engineered and high-grade products, a 5-year warranty with accommodating exceptions and proactive initiation of new innovations, you can rely on us at any time.

Efficiency is an additional strength. We offer an excellent cost-performance ratio which pays off in terms of quality and service. Comprehensive sensor solutions are offered from a single source.

### » APPLICATION KNOW-HOW

We know and understand your applications – thus we consult and act goal-oriented.

### » TECHNOLOGY KNOW-HOW

We have the necessary technology know-how to offer customized products and service.

### » PROCESS KNOW-HOW

We anticipate your processes and make them more lean and efficient, enabling you to save time and money.



Worldwide Subsidiaries and Distributors

## FROM MITTENAAR ACROSS THE GLOBE

### » GLOBAL PLAYER WITH REGIONAL ROOTS

Trend-setting sensors and sensor systems are developed and produced at our headquarters in Mittenaar-Offenbach with currently 190 employees. Besides our core values – safety, openness to new technologies and sustainability as well as our daily motivation striving for excellence in sensors, we established an own R&D department, an in-house test laboratory, a climatic chamber as well as an own SMD assembly line for our PCBs.

In addition, our finished goods warehouse ensures our delivery ability at any time. The responsible handling of resources in all corporate sectors is self-evident.

### » REPRESENTED IN MORE THAN 80 COUNTRIES

Our clients are manufacturers, system integrators, controller companies and strategic distributors in the HVAC industry and building automation. Our products and systems are exported all over the world.

A local support and presence is guaranteed by own branches in Austria, Sweden, China, North America, Norway, Switzerland, Finland and the the Netherlands as well as a sales agency in Russia. Due to a complementary cooperation with distributors in many parts of the world our product portfolio is available in more than 80 countries.



# USEapp – THERMOKON APP FOR INDIVIDUAL CONFIGURATION

## » HIGHLIGHTS UND FEATURES

- » Communication via Bluetooth® Low-Energy-Module (BLE)
- » For use on mobile terminals (Android and iOS)
- » Individual configuration of output signals
- » Setting of different measuring ranges
  
- » Additional adjustment of offset values
- » Parameterization of Live-Zero-Signal (1...10 V etc.)
- » Setting options for display indications
- » Customized parameterization of traffic-light function (TLF)
  
- » Setting of relay performance and thresholds
- » Modbus address offset (extension)
- » Possibility of firmware updates on-the-go (OTG)
- » Adjustment of maintenance intervals



### Ausgänge

Maßsystem:

Messwerte	Outputs
0-50 <input type="text"/>	°C <input type="text" value="1-10V"/>
ppm <input type="text"/>	rh% <input type="text" value="0-10V"/>
% <input type="text"/>	ppm <input type="text" value="0-10V"/>
	% <input type="text" value="0-10V"/>

### TLF

On

8°C 10°C 40°C 50°C

rot gelb grün

### LCD

Helligkeit:

Drehung:

Messgrößen:  On  Off

All "USEapp" based products are supplied with a fully functional standard configuration for direct mounting/installation. Via the "USEapp" it is feasible to extend the range of use and to adapt the configuration individually to application requirements.



## THE **USE** FAMILY FOR EASY AND FAST MOUNTING

### » THE ENCLOSURE FOR MOUNTING EFFICIENCY

The innovative enclosures of the **USE** family are setting new standards: Mounting of sensors is easier, faster and more comfortable than ever before. **USE** makes the decisive difference.

**U**NIVERSALLY MOUNTABLE

**S**AVING TIME

**E**ASY TO INSTALL

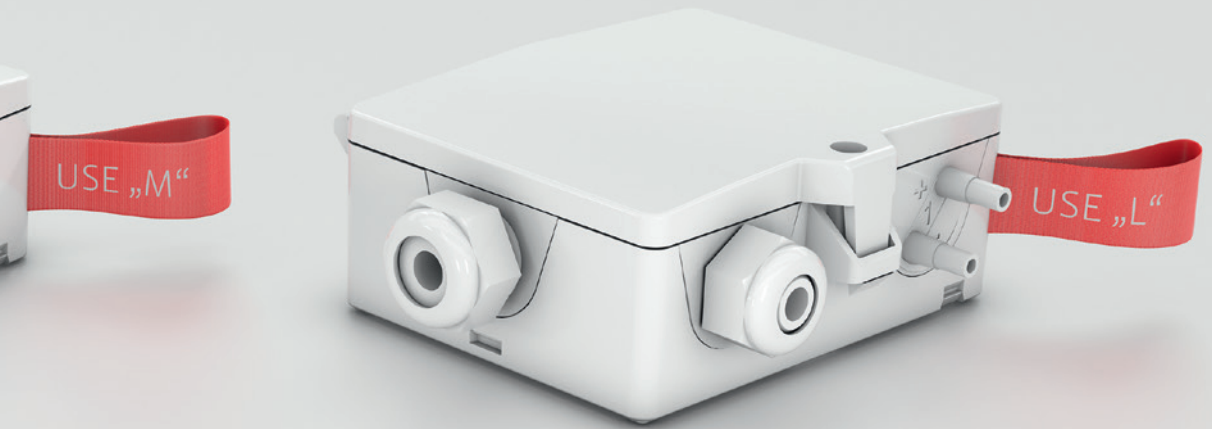
### » UNIVERSAL MOUNTING

**USE** – an intelligent and flexible mounting solution - no matter if for temperature, humidity, air quality or pressure sensors: the **USE** devices enable various mounting methods: with clip, base, flange or even on a DIN rail.

For best possible application flexibility the enclosures of the **USE** family have various modular inserts and cable glands as well as corresponding changeable sealing inserts.

» become a **USER** | The **Thermokon**<sup>®</sup> USE Family





## U NIVERSALLY MOUNTABLE

- » Intelligent and flexible mounting solutions for temperature, humidity, air quality, pressure sensors and others
- » Various modular inserts and cable glands (M16, M20, M25) as well as different changeable sealing inserts for different cable cross-sections



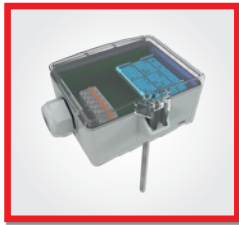
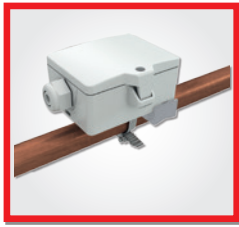
## S AVING OF TIME

- » No tools needed for opening, closing or wiring
- » High mounting flexibility
- » Removable cable glands

## E ASY TO INSTALL

- » Hinged-over (captive) with quick release fastener
- » Fast connection thanks to removable terminal clamps
- » Pre-assembly possible

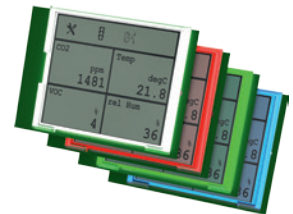




## THE 9 BENEFITS OF THE **USE** FAMILY

### » (1) HIGH-RESOLUTION COLOURED DISPLAY

- » Easy to read Matrix-LCD
- » Displaying up to 4 Sensor Values simultaneously, individual selection
- » Status indicator (maintenance, failure etc.)
- » Status-dependent RGB background illumination (red, green, blue, white)
- » Dimmable luminosity
- » Horizontal or vertical display possible
- » Configurable via "USEapp"



### » (2) APPLICATION-SPECIFIC, EXCHANGEABLE INSERTS AND CABLE GLANDS

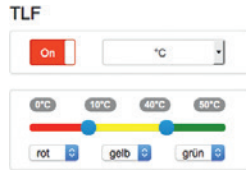
- » Cable glands M16, M20, M25
- » Differential pressure entries: 2-fold, 4-fold (for 2 measurements)
- » Blind cover for EasySens® wireless applications
- » Multiple sealing inserts for different cables and cable diameters





» (3) VISUALIZATION OF DEVICE STATUS AND MEASURED VALUES USING TRAFFIC LIGHT FUNCTION (TLF)

- » Predefined measuring ranges and devices status are indicated using different background illumination
- » Individual configuration possible using the "USEapp" (only in case standard configuration is not suitable)



» (4) MODULAR PLATFORM CONSISTING OF BASE AND OPTION PCBs

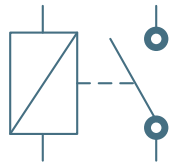
By means of the base PCB, the **USE** family offers multiple option PCBs to extend functionality of every device in order to customize to specific applications e.g.

- Display/traffic light function (TLF)
- 4..20 mA (with/without display)
- BUS systems (with/without display)
- Relay (with/without display)



» (5) THRESHOLD SWITCHES

- » Two relays (5A) to switch in case of exceeding/falling below predefined threshold values
- » Protection mechanism to remain below set limit values
- » Individual configuration possible using the "USEapp"





## ALWAYS THE BEST SOLUTION

### » (6) LIVE ZERO SIGNAL (E.G. 1..10 V)

- » Increase in system reliability by means of quick detection of failures and drop-outs.(e.g. defective cables)
- » The value „zero“ (0 V) will not be read as a normed signal (e.g. 1..10 V for 0..50 °C)
- » Configuration via "USEapp" possible

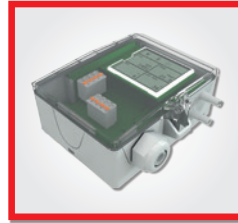
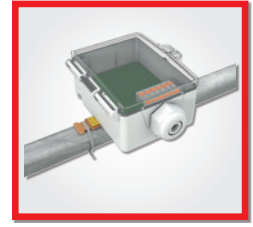
### » (7) MODBUS COMPATIBILITY



- » All products in the **USE M** and **USE L** are Modbus-compatible
- » Strainless BUS-settings via Dip-switches possible
- » Modbus-Address extension using "USE app"
- » Indication of Modbus-Address in the LCD
- » Separated cable glands for BUS connection and output signals
- » Further BUS systems coming up

### » (8) OUTPUT SIGNALS 0..10 V AND 4..20 mA

- » Adaptation of output signals to DDC inputs
- » All products in the **USE M** and **USE L** enclosure offer default a 0..10 V outputs
- » All types V and VV are also available with 4..20 mA outputs



## » (9) CONFIGURATION VIA "USEapp" (THERMOKON APP)

By means of the innovative "USE app", the possible application range in terms of configuration and parameterization is almost limitless. Configurations can be stored and uploaded to the device afterwards.

Alle "USEapp"-compatible products are delivered fully functional with a default configuration for an immediate installation (configuration via DIP switches/jumpers).



» FURTHER INFORMATION ARE AVAILABLE AT [WWW.THERMOKON.COM](http://WWW.THERMOKON.COM)



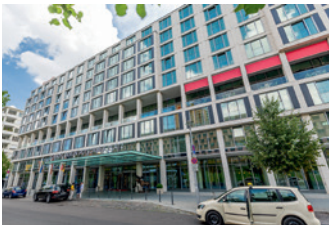
Bikini House  
Berlin, Germany



European Central Bank, New Building  
Frankfurt, Germany



European Patent Office  
Munich, Germany



Scandic  
Berlin, Germany



Le Méridien  
Stuttgart, Germany



Tower 185  
Frankfurt, Germany



Alte Oper  
Frankfurt, Germany



Semperoper  
Dresden, Germany



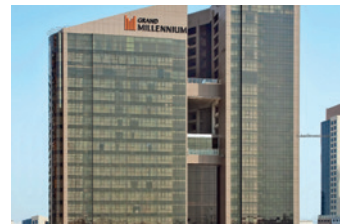
Liebfrauenkirche (Cultural Heritage)  
Trier, Germany



Airport Franz Josef Strauß  
Munich, Germany



Waldorf Astoria  
Berlin, Germany



Grand Millenium  
Dubai, UAE



Fondation Louis Vuitton  
Paris, France



The White House  
Washington D.C., USA



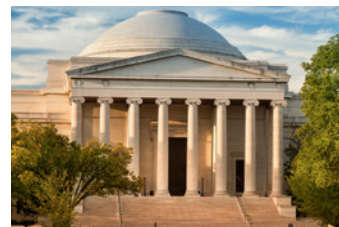
Tomson Riviera Apartment Towers  
Shanghai, China



4 Towers Business Area  
Madrid, Spain



Flughafen Roissy Charles de Gaulle  
Paris, France



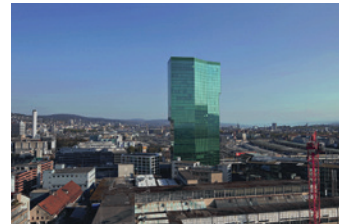
The National Gallery of Art  
Washington D.C., USA



Hotel Savoyen  
Vienna, Austria



Ascot Racecourse  
Ascot, England



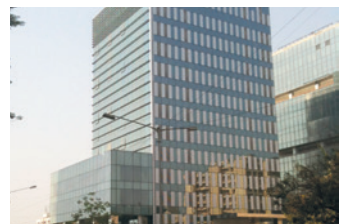
Prime Tower  
Zurich, Switzerland



University of Canterbury  
Christchurch, New Zealand



Changi City Point Shopping Mall  
Singapore



First Rand Bank  
Mumbai, India



## 5-YEAR WARRANTY

### » LASTING RELIABILITY

Due to high quality and durability of our products we offer a 5-year warranty from date of production for all products produced as of 01.01.2014.

You are interested in details? Please visit:

[www.thermokon.de/en/product-highlights/5-years-warranty.html](http://www.thermokon.de/en/product-highlights/5-years-warranty.html)



## SI-PROTECTION

### » FOR NON-CORRODING SENSORS

If the ambient temperature fluctuates around dew-point, condensatation might appear. For your sensors condensate can have unpleasant consequences: Humidity penetrates into the soldering point of the sensor, the sensor oxidizes and begins to corrode. Thus, the measuring result becomes unreliable.



SI-Protection offers you a safe protection against corrosion damages, vibrations and measuring inaccuracies. The contact points of the sensors are first coated with epoxy resin and with a casting compound afterwards.

Due to the permanent connection with the insulation material of the wire a closed unit is established protecting the sensor reliably against vibration and humidity. This effect is additionally supported by the rolled pocket.





# EasySens® Transmitter

Innovative self-powered wireless technology generates energy by means of harvesting ambient light or motion. Interoperable, cost-effective and energy-efficient solutions in building automation are available using our wireless sensor system EasySens®.



## EasySens® | airConfig | airScan SmartACK

### Sample applications

#### Room operating units

thanos SR	Touch room operating unit	26
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SR04 IR	Surface mount temperature sensor	56
LC-SR04	Surface mount temperature sensor	57
SR65	Outdoor temperature sensor	58
SR65 AKF	Duct temperature sensor	59
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#### Humidity

SR07 rH	Room sensor temp. + humidity	64
SR04 rH	Room sensor temp. + humidity	66
LC-SR04 RH	Room sensor temp. + humidity	67
SR65 rH	Outdoor sensor temp. + humidity	68

#### Air quality

SR04 CO2	Surface mount air quality sensor	69
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#### Light & Motion

SR-MDS	Ceiling multi sensor	70
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Jung	Wireless switch without battery	86
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SR-KCS	Wireless key card room control	88

» *Realization of flexible and individual building automation for new buildings and retrofit projects*

## EasySens® – THE SELF-POWERED INTELLIGENT WIRELESS SYSTEM



The use of innovative technology makes it possible: The wireless EnOcean based system EasySens® enables a networked building automation – self-powered, intelligent and maintenance-free. Thus, EasySens® offers best possible flexibility for realizing individual requirements in new buildings and refurbishments.

### » THE BENEFITS

- » Cost saving thanks to Energy Harvesting
- » Flexibility with sensor location – quick and easy mounting and commissioning
- » Easy, wireless integration in existing buildings as well as retrofit adaptations to changed room layouts
- » Reduction of fire load
- » Direct mounting to representative measuring points
- » Compatibility and interoperability with different manufacturers by using international standards (IEC 14543-3-10)

### » SELF-POWERED

Thanks to EasySens® wired power supplies and the change of batteries are things of the past. The Energy Harvesting technology enables a self-powered operation of products.

- » Energy is extracted by using integrated solar cells and kinetic energy of the sensor environment.

### » INTELLIGENT

Using the frequency band 868.3 MHz EasySens® based transmitters and receivers communicate autonomously in the building automation.

- » Status synchronization and triggering of different control commands based on defined parameters
- » Bidirectional communication of self-powered devices by means of SmartACKNOWLEDGE

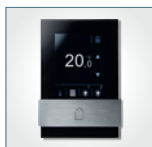
### » WIRELESS

Thanks to EasySens® variable room layouts, reconstructions during running hotel operation or renovations in heritage-protected buildings are pretty simple.

- » No time-consuming works – no wiring
- » Low costs of material enabling cost-effective system solutions



## SYSTEM OVERVIEW



## TRANSMITTERS

## RECEIVERS (TRANSCIEVER)



## TOOLBOX

## INTEROPERABLE SYSTEM INTEGRATION



## » Parameterization without direct interaction of the corresponding EasySens® device (Remote Commissioning)



## airConfig – COMMISSIONING MADE EASY!



The use of EnOcean RF telegrams and the airScan USB transceiver make it possible: airConfig enables comfortable parameterization of your EasySens® devices by means of special remote commissioning commands.

No more direct interaction and tiresome accessing of devices in buildings. Benefit by a significant time-saving. Thus, the communication of your devices is guaranteed.

### » THE BENEFITS

- » Simple seamlessly learning-in, configuration and deletion of devices via RF technology
- » Adjustment of configuration parameters – e.g. waking-up cycles or measuring ranges – in the device settings
- » Saving of configuration parameters
- » Transparent and central availability system information
- » Uncomplicated handling of maintenance and support works

### » COMFORT INCLUSIVE: INSTALLATION + CONFIGURATION

- » Individual designation of sensors
- » Configuration of measured values (EEP) and sensor parameters
- » Learning-in of sensors by means of Drag & Drop via RF (Remote Management)
- » Saving of time (configuration via Copy&Paste)
- » Remote access to product and project information

### » FLEXIBILITY AND SAFETY

- » Structured product presentation thanks to device ID
- » Change of product configurations even at inaccessible mounting places
- » Change of specifications and parameterization on-site or via remote access
- » Password protected configuration of actuators
- » Identification via visual and acoustic feedback





» *Field strength measuring instrument for easy planning and realization of EasySens® projects*

## airScan – MEASURING AND MONITORING



You would like to plan and realize EasySens projects simply? Then airScan, the field strength measuring instrument of Thermokon, is the right tool for you: The traffic light indication (RSSI) displays the signal strengths received and shows reliably the optimal mounting place for transmitters and receivers.

Even in daily use the work with airScan cannot be easier. On the well-structured surface all telegrams received are clearly listed and allocated to the corresponding product.



### » THE BENEFITS

- » Find the best location for your device
- » Monitoring function for easy evaluation of RF telegrams
- » Logging, repeater function and possibility of remote maintenance
- » Data export for further process/analysis in CSV-, XML- or XLS data formats
- » Generation and transmission of EnOcean telegrams
- » Status detection of product ID, field strength and manufacturers of integrated products
- » Full support of EEP2.6.3 standards

### » GENERATION OF TELEGRAMS – EASY, FLEXIBLE, UNCOMPLICATED

- » Taking-over of desired EnOcean profile from a pre-defined EEP selection
- » Definition of telegram content via input fields
- » Easy and fast generation and transmission of telegrams

### » CLEAR VISUAL STRUCTURE

- » Translation of various available measuring values
- » Reliable information on signal quality or RSSI value of telegrams by colour indicator (traffic light system) or graphs

### » PROFESSIONAL MULTI-PURPOSE EVALUATION

- » Detailed evaluation of telegrams (data bytes, RSSI value, sub-telegrams etc.)
- » Decoding of measuring values
- » Background saving of received telegrams
- » Possibility of data export as well as automated forwarding to a FTP server or an e-mail account





SmartACK



SmartACK

## SmartACKNOWLEDGE – BIDIRECTIONALITY IS SMART

By means of SmartACKNOWLEDGE EnOcean based self-powered devices can communicate bidirectionally. They are transmitting the measuring values detected to the building control technology in regularly intervals. In addition to the important status information, the display indicates a centrally controlled reset to default set points. There is no smarter way.

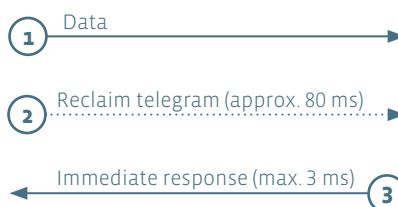
For example our bidirectional room operating units SR06 LCD: In regular intervals the device wakes-up from its sleeping mode and transmits its data and measuring values to a bidirectional receiver or a gateway within some milliseconds. Milliseconds later, SR06 LCD is waking-up again and sends a so-called reclaim telegram to signalize its readiness for receiving. Now, the gateway can transmit the ready data and information to the operating unit.

### » THE BENEFITS

- » Comfort solution for the bidirectional communication of room operating units and building control technology
- » Comfort on-site control of room parameters by means of the keyboard
- » User guidance by means of clear display hints (e.g. information about opened windows)
- » Increase of energy efficiency enabled by the possibility to restore the defined basic set points
- » Self-powered operation via solar cell

Please note:

- » The use of repeaters is not feasible with SmartACKNOWLEDGE as the signal running time is delayed indefinitely.
- » Most of Thermokon gateways are capable of SmartACKNOWLEDGE. Latest information can be obtained by your personal contact.





## ENERGY HARVESTING – RESOURCE FRIENDLY AND MOST FLEXIBLE

Thanks to Energy Harvesting your sensors are not powered by socket outlet but is gained directly from the sensors themselves, either by an integrated solar cell or by the use of movement as a natural energy source – e.g. upon actuation of operating elements.

Thus, your sensors are self-powered and can be freely placed in a room. No batteries are needed at all. The resources gained are used skillfully and economically so that a long lifetime of the sensors is guaranteed.

At present, the products of the following fields are available as battery- and wireless sensors:

- » Temperatur sensors
- » Humidity sensors
- » Light and motion sensors
- » Window contacts and handles
- » Switches for light and blind

## EnOcean ALLIANCE

Almost 40% of the total energy requirements is needed by houses and buildings. This fact can be changed by means of the EnOcean based technology.

More than 300 worldwide leading companies of the building control technology formed the EnOcean Alliance in 2008 with the target to establish the battery- and wireless technology for flexible and maintenance-free sensor solutions in residential, commercial and industrial properties to get sustainable buildings. New standards shall be set by the creation of interoperable system solutions.



As a founder member and promoter we support the further development of a wide range of fully compatible and wireless products enabling the monitoring and control of home and building technology so to ensure the future of this innovative sensor technology.

Worldwide, EnOcean is the first and major ISO/IEC RF standard which optimizes solutions with a significant low energy consumption and energy harvesting.



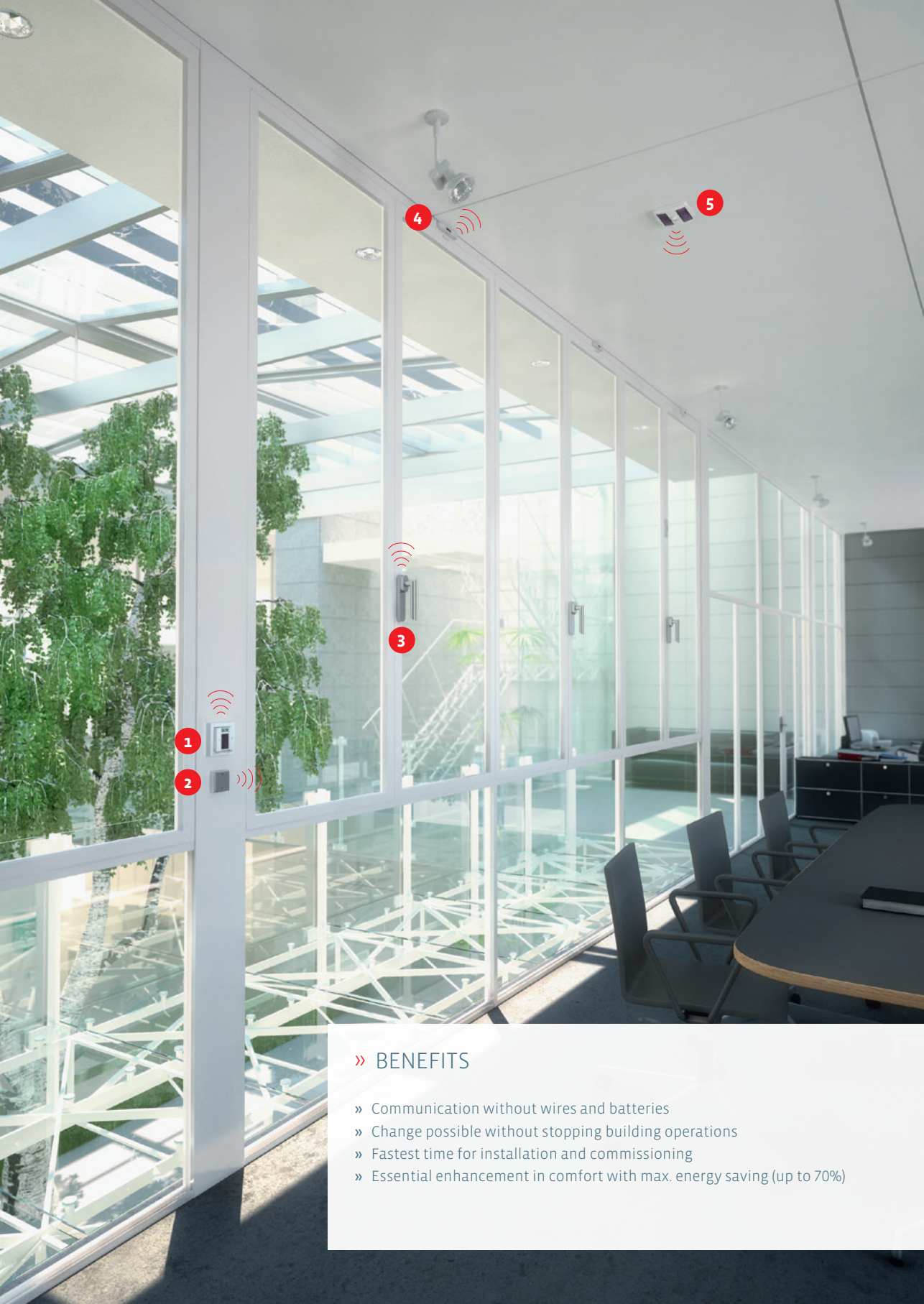
## » BENEFITS

- » Communication without wires and batteries
- » Change possible without stopping hotel operations
- » Fastest time for installation and commissioning
- » Essential enhancement in comfort with max. energy saving (up to 70%)
- » Reduction of fire load

 <p><b>1</b></p> <p><b>thanos L</b> High-end touch screen room operating unit, types available for wireless or BUS systems or wireless+BUS system</p>	 <p><b>2</b></p> <p><b>SR04</b> Surface-mounted wireless room sensor for temperature &amp; rel. humidity Available with various control elements and features</p>	 <p><b>3</b></p> <p><b>SR04 CO2</b> Room sensor CO2/temperature/ rel. humidity Available with display and traffic light function</p>
 <p><b>6</b></p> <p><b>SR-KCS</b> Wireless switch for key card activation to regulate lighting and air-conditioning e.g. in hotel rooms</p>	 <p><b>4</b></p> <p><b>Mini</b> Wireless switch 2-/4-channel lighting/blinds Available in various colours</p>	 <p><b>5</b></p> <p><b>SR-MDS</b> Ceiling multi sensor for light and motion detection for room/space applications</p>
		 <p><b>7</b></p> <p><b>STC65-BUS</b> Gateway for evaluation of EasySens transmitters/switches and connection to the defined BUS system</p> 

## PLACE TO FEEL COMFORTABLE – YOUR HOTEL

All EasySens® devices wirelessly communicate via EnOcean radio. Temperature, set point, air quality, occupancy and switching signals are received and transmitted to superior communication protocols such as KNX, BACnet, LON or RS485 Modbus. This system ensures the possibility to reset all used automation elements to standard values.



## » BENEFITS

- » Communication without wires and batteries
- » Change possible without stopping building operations
- » Fastest time for installation and commissioning
- » Essential enhancement in comfort with max. energy saving (up to 70%)



1

### SR06 LCD 2T/4T

Self powered room operation unit, for setpoint and fan stage adjustment, switch 55x55 mm of various manufacturers possible



2

### Mini

Wireless switch 2-/4-channel lighting/blinds, available in various colours



3

### SRG02

Wireless window handle for status monitoring, available in various colours



4

### SRW01

Wireless window contact for status monitoring of windows and doors



5

### SR-MDS Solar

Ceiling multi sensor detecting light and motion in space/office applications



## COMFORT AT WORK

All EasySens® devices wirelessly communicate via EnOcean radio. Temperature, set point, air quality, occupancy and switching signals are received and transmitted to superior communication protocols such as KNX, BACnet, LON or RS485 Modbus. This system ensures the possibility to reset all used automation elements to standard values.



thanos SR S white



thanos SR L black



thanos SR LQ white

## thanos SR



The touch screen room operating unit thanos is designed for detection of temperature and humidity as well as integrated operation of HVAC, lighting and blinds for room control. High-graded optics ideal for design-oriented applications. Programmable operating functions can be flexibly adapted to suit various room applications.

### TECHNICAL DATA

Measuring values	temperature, humidity, (optional)
Network technology	LON FT (free topology), RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Data transmission	airConfig ready, (all types without BUS)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) 240 V: 100..240 V ~
Power consumption	typ. 2,0 W (24 V =)   4,0 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Inputs	digital, 4x, individual configuration for window contact, dew point guard, key card switch, room frequency, alarm, event
Control functions	occupancy signalling, light ON/OFF/DIM, setup scenarios, blinds UP/DOWN/SET, fan stages, setpoint
Clip	anodized aluminium
No. of buttons	type L/LQ min. 8 capacitive touch sensor buttons
Labelling	type L/LQ flexible insert (for up to 8 touch buttons below/beside clip)
Display	TFT 3,5", 320x640 px, capacitive touch technology showing room temperature, setpoint, operation mode, fan stage, occupancy, alarm, date and time, ... ECO note (several steps, red to green; not available for LON and KNX) graphic and photo: Instead of date and time individual colour graphics (175x50 or 320x240 pixel) can be shown (e.g. company logo or hotel name; not available for LON)
Colour	white or black
Enclosure	PC and glass
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)
Delivery contents	software for configuration (freeware via download)
Notes	you'll find the software description at <a href="http://www.thermokon.com">www.thermokon.com</a> to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)



for thanos without radio please refer to 'Room Operating Units'

## Highlights

### Versions

The device can communicate independently with a receiver, as a stand-alone solution, or it can be integrated into a BUS system along with a gateway.

### New functions / button configuration

Scene buttons / scene channels (0..9), operating mode (heating, cooling, dehumidifying, off), universal on/off, universal +/-.

### Graphics / images

Customer specific graphics can be illustrated in the upper display area (e.g. company logo or hotel name).

### ECO display

Several stages from red to green.

thanos



Radio touch screen room operating unit temperature – 15..24 V		ES1
Item description	Item no.	€
thanos SR L black	471596	613,80
thanos SR L white	471589	613,80
thanos SR LQ black	471619	613,80
thanos SR LQ white	471602	613,80
thanos SR S black	471633	569,20
thanos SR S white	471626	569,20

Radio touch screen room operating unit temperature – 100..240 V		ES1
Item description	Item no.	€
thanos SR L black MVolt	493024	613,80
thanos SR L white MVolt	493017	613,80
thanos SR LQ black MVolt	493048	613,80
thanos SR LQ white MVolt	493031	613,80
thanos SR S black MVolt	493062	569,20
thanos SR S white MVolt	493055	569,20



Radio touch screen room operating unit temperature – LON		ES1
Item description	Item no.	€
thanos SR L black LON	471879	670,70
thanos SR L white LON	471862	670,70
thanos SR LQ black LON	471893	670,70
thanos SR LQ white LON	471886	670,70
thanos SR S black LON	471923	626,10
thanos SR S white LON	471916	626,10



Radio touch screen room operating unit temperature – RS485 Modbus		ES1
Item description	Item no.	€
thanos SR L black RS485 Modbus	472425	632,30
thanos SR L white RS485 Modbus	472418	632,30
thanos SR LQ black RS485 Modbus	472449	632,30
thanos SR LQ white RS485 Modbus	472432	632,30
thanos SR S black RS485 Modbus	472463	587,70
thanos SR S white RS485 Modbus	472456	587,70

Item description: product | humidity (rH) | model | colour | BUS

## thanos SR



Radio touch screen room operating unit temperature + humidity – 15..24 V			ES1
Item description	Item no.	€	
thanos SR rH L black	471664	678,40	
thanos SR rH L white	471640	678,40	
thanos SR rH LQ black	471688	678,40	
thanos SR rH LQ white	471671	678,40	
thanos SR rH S black	471718	633,80	
thanos SR rH S white	471695	633,80	



Radio touch screen room operating unit temperature + humidity – 100..240 V			ES1
Item description	Item no.	€	
thanos SR rH L black MVolt	523103	678,40	
thanos SR rH L white MVolt	523110	678,40	
thanos SR rH LQ black MVolt	523127	678,40	
thanos SR rH LQ white MVolt	523134	678,40	
thanos SR rH S black MVolt	523141	633,80	
thanos SR rH S white MVolt	523158	633,80	



Radio touch screen room operating unit temperature + humidity – LON			ES1
Item description	Item no.	€	
thanos SR rH L black LON	471985	735,40	
thanos SR rH L white LON	471978	735,40	
thanos SR rH LQ black LON	472012	735,40	
thanos SR rH LQ white LON	472005	735,40	
thanos SR rH S black LON	472043	690,70	
thanos SR rH S white LON	472036	690,70	



Radio touch screen room operating unit temperature + humidity – RS485 Modbus			ES1
Item description	Item no.	€	
thanos SR rH L black RS485 Modbus	472487	696,90	
thanos SR rH L white RS485 Modbus	472470	696,90	
thanos SR rH LQ black RS485 Modbus	472500	696,90	
thanos SR rH LQ white RS485 Modbus	472494	696,90	
thanos SR rH S black RS485 Modbus	472524	652,30	
thanos SR rH S white RS485 Modbus	472517	652,30	

Accessories			AS1
Item description	Item no.	On stock	€
Software/Plug-In for configuration (free)			0,00
SD card (2 GB)	500098	☹	11,30
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☹	100,80



thanos SR



thanos SR L black



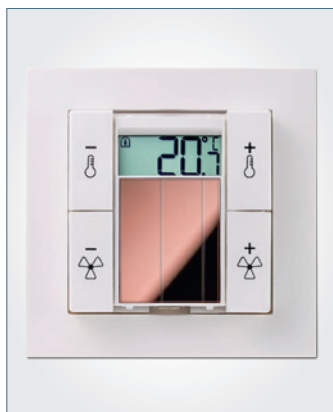
thanos SR L white



thanos SR L white RS485 Modbus



thanos SR S black



SR06 LCD 4T pure white brilliant,  
switch range Gira E2 pure white



SR06 LCD 4T aluminium,  
switch range Gira E2 aluminium



SR06 LCD 2T anthracite,  
switch range Gira E2 anthracite



## SR06 LCD



Bidirectional and energy self-sufficient room operating unit with sensors for detection of temperature and relative humidity (rh type). Depending on the different types available, parameters such as temperature set point, fan stage or room occupancy can be set via the function buttons at the device. SR06 LCD transmits the measuring values to a receiver that directly processes the information received. According to the SR06 LCD type and application used, the values can be forwarded to a central control unit. By means of SmartACK set points and status can be overwritten externally and indicated via the integrated display. Parameterization is done via radio using airConfig or by the optional configuration software (see accessories).

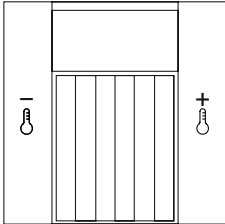
### TECHNICAL DATA

Measuring values	temperature, humidity (optional)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE), airConfig ready
Power supply	solar cell, LiPo-battery, maintenance-free
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig or SR06ConfigSW
Switch range Berker	S.1, B.7 glass,
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Arc, M-Plan, M-Pure
Control functions	occupancy signalling fan stages setpoint
No. of buttons	2T: 2 buttons, 4T: 4 buttons
Display	LCD 29x12 mm, monochrome
Set point range	+15..+30 °C ±10 °C
Enclosure	PC, pure white, aluminium, anthracite
Protection	IP20 according to EN 60529
Ambient condition	-25..+65 °C
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	integrated coin cell backup possibility for usage in dark rooms for configuration an optional programming interface is necessary (refer to accessories) energy storage can be reloaded with a separate USB-cable to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

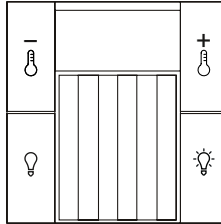
## SR06 LCD

### Labelling types

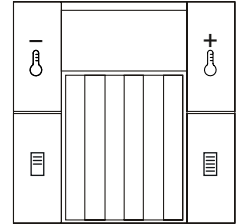
Standard labelling  
for model 2T



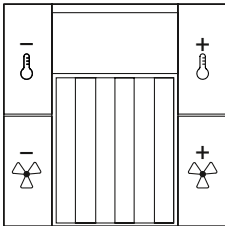
Standard labelling  
for model 2T+Light



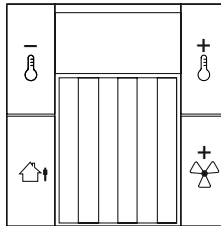
Standard labelling  
for model 2T+Blind



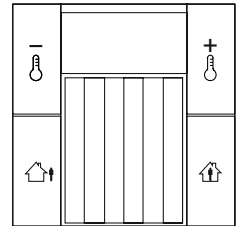
Labelling type 1 (Itype1)  
for model 4T



Labelling type 2 (Itype2)  
for model 4T



Labelling type 3 (Itype3)  
for model 4T



Item description: product | number of buttons | labelling type | switch range | colour



Radio room operating unit temperature		ES2
Item description	Item no.	€
SR06 LCD 2T Gira E2 pure white brilliant	572002	190,20
SR06 LCD 2T Gira E2 aluminium	593236	190,20
SR06 LCD 2T Gira E2 anthracite	593243	190,20
SR06 LCD 2T+Light Gira E2 pure white brilliant	646321	208,60
SR06 LCD 2T+Light Gira E2 aluminium	651677	208,60
SR06 LCD 2T+Light Gira E2 anthracite	651684	208,60
SR06 LCD 2T+Blind Gira E2 pure white brilliant	646338	208,60
SR06 LCD 2T+Blind Gira E2 aluminium	651660	208,60
SR06 LCD 2T+Blind Gira E2 anthracite	651639	208,60
SR06 LCD 4T Itype1 Gira E2 pure white brilliant	572019	204,60
SR06 LCD 4T Itype1 Gira E2 aluminium	593250	204,60
SR06 LCD 4T Itype1 Gira E2 anthracite	593267	204,60

Options		€
Item description		
Switch ranges Busch-Jaeger Busch-balance® SI		0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3		0,00
Switch range Gira Esprit		22,30
Other switch ranges		12,50
Labelling type 2 (Itype2)		0,00
Labelling type 3 (Itype3)		0,00

Item description: product | humidity (rH) | number of buttons | labelling type | switch range | colour

## SR06 LCD



Radio room operating unit temperature + humidity			ES2
Item description	Item no.	€	
SR06 LCD rH 2T Gira E2 pure white brilliant	572026	272,50	
SR06 LCD rH 2T Gira E2 aluminium	593274	272,50	
SR06 LCD rH 2T Gira E2 anthracite	593281	272,50	
SR06 LCD rH 2T+Light Gira E2 pure white brilliant	651790	290,90	
SR06 LCD rH 2T+Light Gira E2 aluminium	651868	290,90	
SR06 LCD rH 2T+Light Gira E2 anthracite	651875	290,90	
SR06 LCD rH 2T+Blind Gira E2 pure white brilliant	651899	290,90	
SR06 LCD rH 2T+Blind Gira E2 aluminium	651882	290,90	
SR06 LCD rH 2T+Blind Gira E2 anthracite	651912	290,90	
SR06 LCD rH 4T Itype1 Gira E2 pure white brilliant	572033	286,90	
SR06 LCD rH 4T Itype1 Gira E2 aluminium	593298	286,90	
SR06 LCD rH 4T Itype1 Gira E2 anthracite	593304	286,90	

Options	
Item description	€
Switch ranges Busch-Jaeger Busch-balance® SI	0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00
Switch range Gira Esprit	22,30
Other switch ranges	12,50
Labelling type 2 (Itype2)	0,00
Labelling type 3 (Itype3)	0,00

Order example for different items:

**SR06 LCD | rH | 4T | Itype2 | Gira Esprit**

**SR06 LCD** = product  
**rH** = humidity  
**4T** = number of buttons  
**Itype2** = labelling type 2  
**Gira Esprit** = switch range Gira Esprit

Accessories				AS1
Item description	Item no.	On stock	€	
Coin cell CR1632	597814	☹	4,00	
Programming interface for configuration and charging (SR06 LCD)	597838	☹	34,80	
airConfig (freeware, via download)			0,00	
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☹	100,80	

## SR06 LCD

### Example designs



SR06 LCD 4T pure white brilliant,  
switch range Gira Esprit glass mint



SR06 LCD 2T anthracite,  
switch range Gira Esprit glass mint



SR06 LCD 4T pure white brilliant,  
switch range Gira E3 pure white brillitant



SR06 LCD 2T anthracite,  
switch range Gira E3 slate-blue Soft-Touch



## SR07 x

Room temperature sensor with set point adjustment and humidity sensor (optional) for room/space applications. Also available with slide switch ("day/night"). Compatible with various design frames (55x55 mm) of different manufacturers.



SR07 P aluminium,  
switch range Gira E2



SR07 PT pure white brilliant,  
switch range Gira E2



SR07 PMS (day/night) anthracite,  
switch range Gira E2

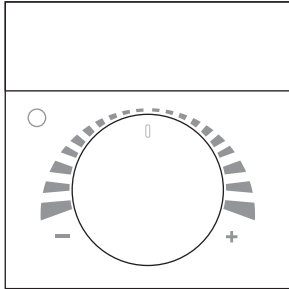
### TECHNICAL DATA

Measuring values	temperature, humidity (optional)
Radio technology	EnOcean (IEC 14543-3-10), STM
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K or >1,6% rH, otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Arc, M-Plan, M-Pure
Set point (P)	potentiometer
Slide switch (MS)	0/I, day/night
Button (T)	for presence detection
Protection	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil

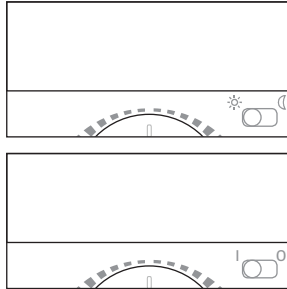
## SR07 x

### Labelling types

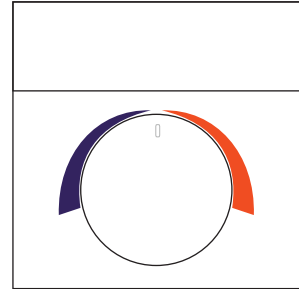
SR07 PT



SR07 PMS (day/night)  
SR07 PMS (I / 0)



SR07 P  
standard labelling colour  
(refer to options)



Item description: product | operating elements | switch range | colour



Radio room operating unit temperature		ES2
Item description	Item no.	€
SR07 P Gira E2 pure white brilliant	572040	156,10
SR07 PT Gira E2 pure white brilliant	572057	164,40
SR07 PMS (day/night) Gira E2 pure white brilliant	572064	164,40
SR07 P Gira E2 aluminium	593311	156,10
SR07 PT Gira E2 aluminium	593335	164,40
SR07 PMS (day/night) Gira E2 aluminium	593359	164,40
SR07 P Gira E2 anthracite	593328	156,10
SR07 PT Gira E2 anthracite	593342	164,40
SR07 PMS (day/night) Gira E2 anthracite	593366	164,40

Options	
Item description	€
Default labelling P colour red+blue	6,00
Default labelling MS I/0	0,00
Switch ranges Busch-Jaeger Busch-balance® SI	0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00
Switch range Gira Esprit	22,30
Switch ranges glass (different manufacturers)	35,10
Other switch ranges	12,50

Order example for different items:

**SR07 | PMS | Busch-balance® SI alpin white**

**SR07** = product  
**PMS** = potentiometer, slide switch  
**Busch-balance® SI alpin white** = switch range Busch-Jaeger Busch-balance® SI alpin white

Item description: product | operating elements | humidity (rH) | switch range | colour

## SR07 x



Radio room operating unit temperature + humidity			ES2
Item description	Item no.	€	
SR07 P rH Gira E2 pure white brilliant	597722	238,40	
SR07 PT rH Gira E2 pure white brilliant	597739	246,70	
SR07 PMS rH (day/night) Gira E2 pure white brilliant	597746	246,70	
SR07 P rH Gira E2 aluminium	597753	238,40	
SR07 PT rH Gira E2 aluminium	597760	246,70	
SR07 PMS rH (day/night) Gira E2 aluminium	597777	246,70	
SR07 P rH Gira E2 anthracite	597784	238,40	
SR07 PT rH Gira E2 anthracite	597791	246,70	
SR07 PMS rH (day/night) Gira E2 anthracite	597807	246,70	

Options		€
Item description		
Default labelling P colour red+blue	6,00	
Default labelling MS I/0	0,00	
Switch ranges Busch-Jaeger Busch-balance® SI	0,00	
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00	
Switch range Gira Esprit	22,30	
Switch ranges glass (different manufacturers)	35,10	
Other switch ranges	12,50	

Order example for different items:

**SR07 | PMS | rH | Gira Esprit**

**SR07** = product  
**PMS** = potentiometer, slide switch  
**rH** = humidity  
**Gira Esprit** = switch range Gira Esprit

Accessories				AS1
Item description	Item no.	On stock	€	
Coin cell CR1632	597814	⊕	4,00	





SR04 P



SR04 PMS (day/night)



SR04 PST

## SR04 x

Room temperature sensor with optional, set point and fan stage adjustment as well as manual over ride for room/space applications.

### TECHNICAL DATA

Measuring values	temperature humidity (optional)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz optional: 902 MHz, 928 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing (optional)
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission intervall	every 100 sec. at change >0,3 K otherwise every 1000 sec.
Set point (P)	potentiometer default value 10 kΩ (1 kΩ   5 kΩ optional, for other values please request)
Slide switch (MS)	0/1 day/night
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto,0,I,II,III)
Button (T)	for presence detection
Enclosure	ASA, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil

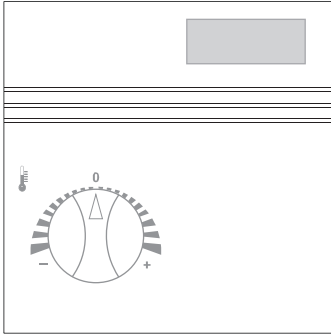


**SR04 x**

**Types with standard labelling**

special labelling refer to p. 346

SR04 P



**Legend:**

P = potentiometer

S = rotary switch

T = button

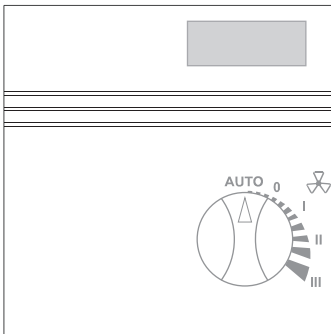
D = LED

FSx = number of fan stages

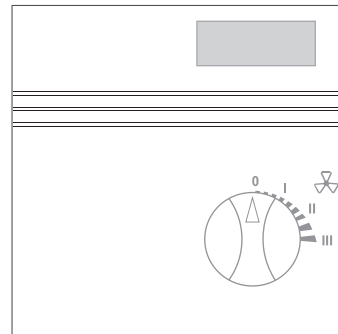
for sensor types refer to items,

SR04 without operating elements refer to p. 55

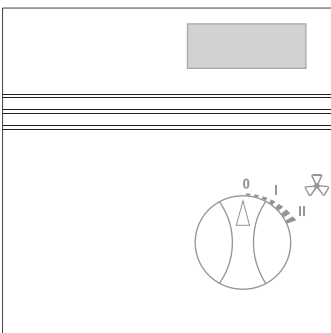
**SR04 S with 5 fan stages**  
(FS5, standard)



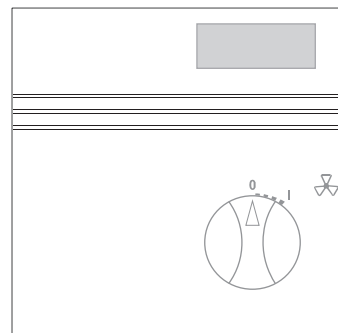
**SR04 S with 4 fan stages**  
(FS4, refer to options)



**SR04 S with 3 fan stages**  
(FS3, refer to options)

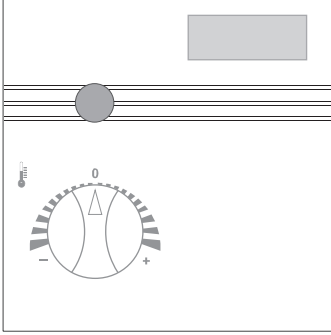


**SR04 S with 2 fan stages**  
(FS2, refer to options)



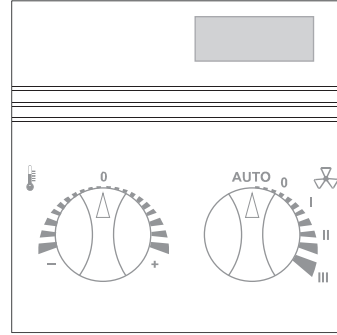
SR04 x

SR04 PT

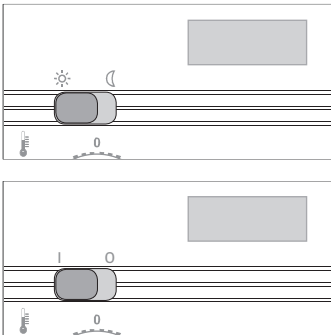


SR04 PS with 5 fan stages

FS5, also available with FS4, FS3 and FS2

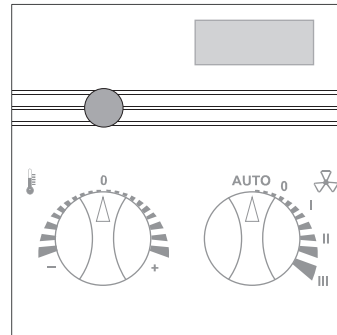


SR04 PMS (day/night) | SR04 PMS (I / O)

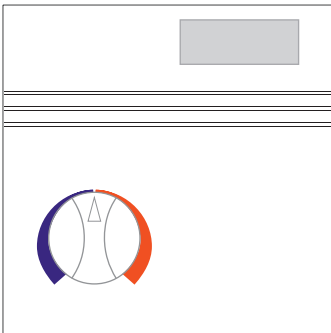


SR04 PST with 5 fan stages

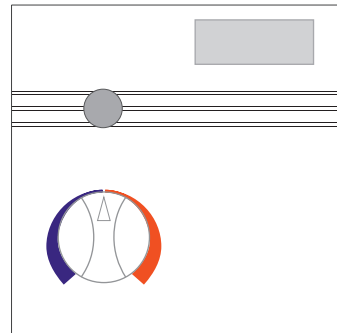
FS5, also available with FS4, FS3 and FS2



SR04 P standard labelling colour  
(refer to options)



SR04 PT standard labelling colour  
(refer to options)



## SR04 x

Item description: product | operating elements | fan stages

Radio room operating unit temperature				ES2
Item description	Item no.	On stock		€
SR04 P	226172	☉		139,60
SR04 T	229968			136,00
SR04 PT	227353	☉		147,90
SR04 PS, FS5	250900			165,60
SR04 PMS (day/night)	312219			147,90
SR04 PMS (I/O)	267854			147,90
SR04 PST, FS5	226851			177,40

Item description: product | operating elements | humidity (rH)

Radio room operating unit temperature + humidity				ES2
Item description	Item no.	On stock		€
SR04 P rH	252331	☉		236,60
SR04 PT rH	261593			251,90
SR04 PMS rH (day/night)	361644			251,90
SR04 PMS rH (I/O)	269469			251,90

Options		
Item description		€
Rotary switch S with 4 fan stages (FS4)		0,00
Rotary switch S with 3 fan stages (FS3)		0,00
Rotary switch S with 2 fan stages (FS2)		0,00
Default labelling P colour red+blue		6,00

Order example for different items:

**SR04 | PST | FS4 | standard labelling colour red-blue**

**SR04** = product  
**PST** = potentiometer, rotary switch, button  
**FS4** = rotary switch (S) with 4 fan stages  
**Labelling** = standard labelling colour red-blue

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	☉		4,00



## SR07

Room temperature sensor radio for room/space applications. Compatible with various design frames (55x55 mm) of different manufacturers.



SR07 pure white brilliant,  
switch range Gira E2



SR07 aluminium,  
switch range Gira E2



SR07 anthracite,  
switch range Gira E2

### TECHNICAL DATA

Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,4 K (typ. at 21 °C)
Measuring interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Arc, M-Plan, M-Pure
Enclosure	PC, pure white aluminium anthracite
Protection	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	integrated coin cell backup possibility for usage in dark rooms

## SR07

Item description: product | switch range | colour

Radio room sensor temperature			ES2
Item description	Item no.	€	
SR07 Gira E2 pure white brilliant	593847	139,60	
SR07 Gira E2 aluminium	630481	139,60	
SR07 Gira E2 anthracite	630498	139,60	

Options		
Item description		€
Switch ranges Busch-Jaeger Busch-balance® SI		0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3		0,00
Switch range Gira Esprit		22,30
Switch ranges glass (different manufacturers)		35,10
Other switch ranges		12,50

Order example for different items:

**SR07 | Gira Esprit**

**SR07** = product

**Gira Esprit** = switch range

Accessories				AS1
Item description	Item no.	On stock	€	
Coin cell CR1632	597814		4,00	



SR04



## SR04

EasySens® radio room sensor for temperature detection in room/space applications.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,4 K (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K otherwise every 1000 sec.
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	integrated battery backup possibility for usage in dark rooms for devices with operating elements please refer to product SR04 x

Radio room sensor temperature			ES2
Item description	Item no.	On stock	€
SR04	228848	●	118,30

Accessories			AS1
Item description	Item no.	On stock	€
Battery LS14250	315098	●	4,00



SR04 IR



## SR04 IR

EasySens® radio surface mounted room sensor for measuring of radiation temperature in room and office applications.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,4 K (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K otherwise every 1000 sec.
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil

Radio room sensor radiation temperature			ES2
Item description	Item no.		€
SR04 IR	649346		140,00

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	⊖		4,00





LC-SR04



## LC-SR04

Radio room temperature sensor for illuminated rooms. For device with operating elements, adjustable telegram intervals and battery backup please refer to product SR04.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,5 K (typ. at range +17..+27 °C)
Measuring interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,8 K otherwise every 1000 sec.
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	for device with operating elements, adjustable telegram intervals and battery backup please refer to product SR04 SR04 rH

Radio room sensor temperature		ES2
Item description	Item no.	€
LC-SR04	566698	81,80



SR65



## SR65



For temperature detection in outdoor areas, cold stores, greenhouses, production plants and warehouses. Self-powered EnOcean wireless technology. Configured via airConfig.

### TECHNICAL DATA

Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20..+60 °C, configured via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=40 mm
Ambient condition	-25..+65 °C max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dark rooms to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

### Radio outdoor sensor temperature

ES2

Item description	Item no.	On stock	€
SR65	230001	⊕	136,00

### Accessories

AS1

Item description	Item no.	On stock	€
Battery LS14250	315098	⊕	4,00
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	⊕	100,80



SR65 AKF



## SR65 AKF

Self powered wireless EnOcean duct sensor to measure the temperature in gaseous media of heating, ventilation and air-conditioning systems. Configured via airConfig.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	+10..+90 °C, configured via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=100 mm mounting lengths available: 50   100   150   200   250   300   450 mm
Ambient condition	-25..+65 °C max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dark rooms other probe lengths on request to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Item description: product | pocket (length.Ø)

Radio duct/immersion sensor temperature		ES2
Item description	Item no.	€
SR65 AKF 100.06	630566	144,30

## SR65 AKF

Accessories				AS1
Item description	Item no.	On stock	€	
Battery LS14250	315098	☉	4,00	
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	☉	6,30	
Mounting flange MF6 (brass)	3407	☉	6,30	
airConfig (freeware, via download)			0,00	
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☉	100,80	

Accessories – thermowell pockets brass for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	☉	8,95	

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	☉	18,90	
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	☉	18,20	



SR65 TF



## SR65 TF

Self-powered wireless EnOcean sensor to measure the temperature in gaseous media of heating, ventilation and air-conditioning systems. Configured via airConfig.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20..+60 °C, configured via airConfig
Working range temp.	-40..+130 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measuring interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Pocket	stainless steel V4A, Ø=6 mm, L=50 mm mounting lengths available: 50   100   150   200   250 mm
Ambient condition	-25..+65 °C max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dark rooms other probe lengths on request to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Item description: product | pocket (length.Ø) | cable length (L)

Radio cable sensor temperature		ES2
Item description	Item no.	€
SR65 TF 050.06 L1000	245647	138,00

Options	
Item description	€
Add per meter of connection cable -50..+180 °C	1,60

Order example for different items:

**SR65 TF | 050.06 | L2000**

**SR65 TF** = product  
**050.06** = pocket (length.Ø)  
**L2000** = cable length (mm)

## SR65 TF

Accessories				AS1
Item description	Item no.	On stock	€	
Battery LS14250	315098	☉	4,00	
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	☉	6,30	
Mounting flange MF6 (brass)	3407	☉	6,30	
KL6VA – Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	☉	12,70	
airConfig (freeware, via download)			0,00	
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☉	100,80	

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
VA-thermowell pocket 50 mm type THVADS50	50 mm	36 mm	611152	☉	17,10	
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	☉	18,90	
VA-thermowell pocket 150 mm type THVADS150	150 mm	136 mm	611824	☉	20,30	
VA-thermowell pocket 200 mm type THVADS200	200 mm	186 mm	611848	☉	21,40	
VA-thermowell pocket 250 mm type THVADS250	250 mm	236 mm	611862	☉	26,60	

Accessories – thermowell pockets brass for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
MS-thermowell pocket 50 mm type THMSDS50	50 mm	36 mm	610995	☉	7,85	
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	☉	8,95	
MS-thermowell pocket 150 mm type THMSDS150	150 mm	136 mm	611015	☉	9,45	
MS-thermowell pocket 200 mm type THMSDS200	200 mm	186 mm	611022	☉	9,75	
MS-thermowell pocket 250 mm type THMSDS250	250 mm	236 mm	611985	☉	11,30	



SR65 VFG



## SR65 VFG



Self-powered wireless Enocean clamp on pipe temperature sensor. Configured via airConfig.

TECHNICAL DATA	
Measuring values	temperature
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	+10..+90 °C, configured via airConfig
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Pocket	brass, spring loaded sensor
Ambient condition	-25..+65 °C max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dark rooms to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Radio contact sensors temperature			ES2
Item description	Item no.		€
SR65 VFG	239615		136,00

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	⊕		4,00
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊕		1,65
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊕		3,10
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊕		1,65
airConfig (freeware, via download)				0,00
EnOcean usb transceiver for airConfig/airScan (incl. license - net price)	566704	⊕		100,80



## SR07 rH

Room sensor for humidity and temperature detection in room/space applications. Compatible with various frame designs 55x55 mm or 63x63 mm.



SR07 rH pure white brilliant,  
switch range Gira E2



SR07 rH aluminium,  
switch range Gira E2



SR07 rH anthracite,  
switch range Gira E2

### TECHNICAL DATA

Measuring values	temperature, humidity
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K or >1,6% rH otherwise every 1000 sec.
Switch range Berker	S.1, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Arc, M-Plan, M-Pure
Enclosure	PC, pure white aluminium anthracite
Protection	IP20 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	integrated coin cell backup possibility for usage in dark rooms



## SR07 rH

Item description: product | switch range | colour

Radio room sensor temperature + humidity			ES2
Item description	Item no.	€	
SR07 rH Gira E2 pure white brilliant	593182	221,90	
SR07 rH Gira E2 aluminium	593205	221,90	
SR07 rH Gira E2 anthracite	593199	221,90	

Options	
Item description	€
Switch ranges Busch-Jaeger Busch-balance® SI	0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00
Switch range Gira Esprit	22,30
Switch ranges glass (different manufacturers)	35,10
Other switch ranges	12,50

Order example for different items:

**SR07 rH | Gira Esprit**

**SR07 rH** = product

**Gira Esprit** = switch range Gira Esprit

Accessories			AS1
Item description	Item no.	On stock	€
Coin cell CR1632	597814	●	4,00



SR04 rH



## SR04 rH

Room sensor for humidity and temperature detection in room/space applications.

### TECHNICAL DATA

Measuring values	temperature, humidity
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,4 K (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring interval	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change >0,3 K or >1,6% rH otherwise every 1000 sec.
Set point (P)	potentiometer default value 10 kΩ (1 kΩ   5 kΩ optional, for other values please request) optional
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	integrated battery backup possibility for usage in dark rooms for devices with operating elements please refer to product SR04 x

### Radio room sensor temperature + humidity

ES2

Item description	Item no.	On stock	€
SR04 rH	252317	●	200,50

### Accessories

AS1

Item description	Item no.	On stock	€
Battery LS14250	315098	●	4,00



LC-SR04 rH



## LC-SR04 rH



Room sensor for humidity and temperature detection in illuminated room/space applications. For device with operating elements, adjustable telegram intervals and battery backup please refer to product SR04 rH.

TECHNICAL DATA	
Measuring values	temperature, humidity
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free
Measuring range temp.	0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at range +17..+27 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Transmission interval	every 100 sec. at change >0,8 K or >1,6% rH otherwise every 1000 sec.
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Delivery contents	adhesive foil
Notes	for device with operating elements, adjustable telegram intervals and battery backup please refer to product SR04 SR04 rH

### Radio room sensor temperature + humidity

ES2

Item description	Item no.	€
LC-SR04 rH	555975	132,70



SR65 rH



## SR65 rH



Wireless sensor for detection of temperature and rel. humidity in outdoor areas, cold stores, greenhouses, production plants and warehouses. Self powered EnOcean wireless technology. Configured via airConfig.

### TECHNICAL DATA

Measuring values	temperature, humidity
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range temp.	-20...+60 °C, configured via airConfig
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Accuracy humidity	±5% between 30..70% rH (typ. at 21 °C)
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Ambient condition	-20...+70 °C, max. 85% rH short term condensation
Notes	integrated battery backup possibility for usage in dark rooms to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Radio outdoor sensor temperature + humidity			ES2
Item description	Item no.	On stock	€
SR65 rH	540391	⊕	245,00

Accessories			AS1
Item description	Item no.	On stock	€
Battery LS14250	315098	⊕	4,00
Rawplugs and screws (2 pcs. each)	102209	⊕	0,80
Filter stainless steel, wire mesh (spare part)	231169	⊕	8,80
Rain protection PA6 white, for outdoor humidity sensor	587709	⊕	5,80
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	⊕	100,80



## SR04 CO2

For detection of CO2 and temperature and humidity (optional) integrated in one unit.



SR04 CO2 rH LCD TLF



SR04 CO2 rH LCD / SR04 CO2 rH TLF

### TECHNICAL DATA

Measuring values	temperature, CO2, humidity (optional)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	15..24 V (=±10%) or 24 V ~ (=±10%)
Power consumption	max. 1,5 W (24 V =)   3,6 VA (24 V ~)
Measuring range temp.	0..+51 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO2	0..2550 ppm
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Accuracy CO2	±75 ppm, >750 ppm: ±10% (typ. at 21 °C)
Calibration	self-calibration, Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Display	LCD 29x12 mm, monochrome (optional) 3 LEDs indicating air quality (traffic light function 'TLF') (optional)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm) screw mounted onto flat surface



Item description: product | LCD | TLF (traffic light function)

Radio room sensor temperature + CO2			ES2
Item description	Item no.	On stock	€
SR04 CO2	442510	⊖	279,70
SR04 CO2 LCD	467131		308,50
SR04 CO2 TLF	436557		286,90
SR04 CO2 LCD TLF	630634		315,70

Radio room sensor temperature + humidity + CO2			ES2
Item description	Item no.	On stock	€
SR04 CO2 rH	434768		331,10
SR04 CO2 rH LCD	462228		359,90
SR04 CO2 rH TLF	516143		338,30
SR04 CO2 rH LCD TLF	474757		367,10

Accessories			AS1
Item description	Item no.	On stock	€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊖	42,00



SR-MDS



## SR-MDS

Ceiling multi sensor for light and motion detection using EnOcean radio technology.

TECHNICAL DATA	
Measuring values	light, motion
Radio technology	EnOcean (IEC 14543-3-10), STM
Frequency	868 MHz
Power supply	flex. 15..240 V =/~ BAT: 3x battery LS14250, 3,6 V
Power consumption	typ. 0,8 W (24 V =)   1,2 VA (24 V ~)
Measuring range light	0..510 Lux
Measuring intervall	WakeUp time = 100 sec. (default)
Transmission interval	every 100 sec. at change of brightness >10 lux in case of detected motion every 1000 sec. at change of brightness <10 lux in case of no motion detected every 100 sec. at change of brightness <10 lux in case of detected motion every 10 sec. at change of brightness >10 lux in case of detected motion immediatly at status change from no motion to motion or reverse
Detection range	Ø=5 m at a sensor height of approx. 2,5 m
Enclosure	ABS, pure white
Protection	IP20 according to EN 60529
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Notes	appropriate for constant light control

Item description: product | BAT (battery)

Radio ceiling sensor light + motion				ES2
Item description	Item no.	On stock		€
SR-MDS	396486	⊕		256,20
SR-MDS BAT	396462			256,20

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	⊕		4,00
Enclosure for surface mounting SR-MDS pure white	514439	⊕		48,20
Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	⊕		6,50



SR-MDS Solar



## SR-MDS Solar



The EnOcean self powered multi sensor detects light and motion. No battery or wiring necessary.

TECHNICAL DATA	
Measuring values	light, motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap, maintenance-free optional: backup battery LS14250 (3,6 V)
Measuring range light	0..510 Lux (standard) 0..1000 Lux (10 Bit) 0..1020 Lux configured via airConfig
Measuring intervall	occupancy (30, 60 sec., 10, 15 min.) light (10, 20, 30, 60 sec.) configured via airConfig
Transmission interval	occupancy (30, 60 sec., 10, 15 min.) light (10, 20, 30, 60 sec. when value changes) configured via airConfig
Detection range	Ø=5 m at a sensor height of approx. 2,8 m, 102° x 92°
Sensor	PIR (passive infrared)
Enclosure	PC, pure white
Protection	IP50 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted onto flat surface
Notes	integrated battery backup possibility for usage in dark rooms to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Radio ceiling sensor light + motion			ES2
Item description	Item no.	On stock	€
SR-MDS Solar	591577	⊕	256,20

Accessories			AS1
Item description	Item no.	On stock	€
Battery LS14250	315098	⊕	4,00
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	⊕	100,80



SR-MOC Solar



## SR-MOC Solar

Solar ceiling sensor with battery backup (optional) for motion detection using EnOcean radio technology.

### TECHNICAL DATA

Measuring values	motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free Battery: Coin cell CR2032 (optional) terminal block for external power supply 3..5 V =
Measuring interval	heartbeat: 1 h
Transmission interval	Immediately at status change from no motion to motion or reverse. during occupancy: every 2 min. no occupancy: after 10 and 30 min.
Detection range	Ø=5 m at a sensor height of approx. 2,5 m
Sensor	PIR (passive infrared)
Enclosure	PC, white
Protection	IP50 according to EN 60529
Ambient condition	0..+40 °C, max. 85% rH non-condensing
Mounting	surface mounting to be mounted flat onto the surface using adhesive foil (included) or screws

### Radio ceiling sensor motion

ES2

Item description	Item no.	On stock	€
SR-MOC Solar	566070	●	163,50

### Accessories

AS1

Item description	Item no.	On stock	€
Coin cell CR2032	347013	●	4,00
Rawlplugs and screws (2 pcs. each)	102209	●	0,80





SR-MOW Solar



## SR-MOW Solar

Wireless solar wall sensor with battery backup (optional) for motion detection using EnOcean radio technology.

TECHNICAL DATA	
Measuring values	motion
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	solar cell, internal super cap, maintenance-free Battery: Coin cell CR2032 (optional) terminal block for external power supply 3..5 V =
Measuring interval	heartbeat: 1 h
Transmission interval	Immediately at status change from no motion to motion or reverse. during occupancy: every 2 min. no occupancy: after 10 and 30 min.
Detection range	Wide angle lens up to 15 m, field lens up to 30 m when mounted at height 2,10 m
Sensor	PIR (passive infrared)
Enclosure	PC, white
Protection	IP20 according to EN 60529
Ambient condition	-10..+40 °C
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws

Radio wall sensor motion			ES2
Item description	Item no.	On stock	€
SR-MOW Solar	566094	⊕	142,90

Accessories			AS1
Item description	Item no.	On stock	€
Coin cell CR2032	347013	⊕	4,00
Rawlplugs and screws (2 pcs. each)	102209	⊕	0,80



SR65 Li



## SR65 Li



Wireless light sensor for blind systems. Can also be used to control light at sunset. Configured via airConfig.

TECHNICAL DATA	
Measuring values	light
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap optional: backup battery LS14250 (3,6 V)
Measuring range light	0..510 Lux 0..1000 Lux (10 Bit) 0..1020 Lux 300..30.000 Lux 600..60.000 Lux configured via airConfig
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Ambient condition	-20..+70 °C max. 85% rH short term condensation
Notes	resolution: 8 bit or 10 bit to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Radio outdoor sensor light			ES2
Item description	Item no.		€
SR65 Li	598354		168,50

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	☺		4,00
airConfig (freeware, via download)				0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☺		100,80



SR-MI



## SR-MI

Wireless module for evaluation of pulse signals for gas, water, electric and BTU meters with S0 interfaces.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external transmitting antenna with magnetic holding
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,2 W (24 V =)   0,4 VA (24 V ~)
Inputs	3x S0-interface
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting antenna 2,5 m with magnetic holding

Wireless module			ES2
Item description	Item no.		€
SR-MI	471428		169,90

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	●		56,10
Antenna extension 20 m	257213	●		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	●		14,30



SR65-3AI



## SR65-3AI

The module has 3x 0..10 V inputs. The input values are transmitted wirelessly to an EasySens receiver. This allows standard analogue signals to simply integrate into a wireless EnOcean network.

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 0,2 W (24 V =)   0,4 VA (24 V ~)
Measuring interval	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup
Inputs	3x analog input, 0..10 V
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. $\varnothing=8$ mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-25..+65 °C max. 85% rH short term condensation

Wireless module			ES2
Item description	Item no.		€
SR65-3AI	527071		136,00

Accessories				AS1
Item description	Item no.	On stock		€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	☺		42,00



SR65 DI



## SR65 DI



Wireless relay module for transmission of binary switching status.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Data transmission	airConfig ready
Power supply	solar cell, internal super cap battery LS14250 (3,6 V)
Measuring intervall	WakeUp time = 100 sec. (default) heartbeat cycle = every 10th wakeup configured via airConfig
Inputs	input for floating contact contact resistance max. 1000 Ω
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-25..+65 °C max. 85% rH short term condensation
Delivery contents	1x battery LS14250
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Radio module			ES2
Item description	Item no.		€
SR65 DI	267731		136,00

Accessories				AS1
Item description	Item no.	On stock		€
Battery LS14250	315098	⊕		4,00
airConfig (freeware, via download)				0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	⊕		100,80



## SRG02



SRG02 aluminium pure white



SRG02 aluminium steel grey



SRG02 stainless steel

Batteryless window handle for status monitoring of windows (option lockable available) with EnOcean technology. When actuated, the handle transmits a radio signal with the handle position to an actuator or central control unit in order, for example, to activate an energy lock. This can be used to optimize energy consumption in the building, since the heating or ventilation is deactivated when the windows are open. Replaces SRG01 having a square spindle with variable lengths for tread depth 32.42 mm usable in various window frames.

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting antenna
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	turning the window handle
Enclosure	aluminium pure white painted aluminium steel grey stainless steel
Ambient condition	+5..+40 °C, max. 80% rH non-condensing
Mounting	Square spindle, variable lengths (for tread depth 32.42 mm)
Notes	lockable (option) also available as sliding door handle (on request) sideways with position precision

Item description: product | material | colour

Radio window handle			ES1
Item description	Item no.		€
SRG02 aluminium pure white	665018	⊕	105,20
SRG02 aluminium steel grey	665025	⊕	105,20
SRG02 stainless steel	665032	⊕	176,70

Radio window handle, lockable			ES1
Item description	Item no.		€
SRG02 lockable aluminium pure white	665049	⊕	151,00
SRG02 lockable aluminium steel grey	665056	⊕	151,00





SRW01



## SRW01

Window contact for status monitoring of windows and doors.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	solar cell, internal super cap, maintenance-free BAT: coin cell CR1220 (optional)
Transmission interval	at status change otherwise every 1000 sec.
Sensor	Reed contact
Enclosure	ABS, pure white
Protection	IP40 according to EN 60529
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	special painting available on request

Item description: product | BAT (battery)

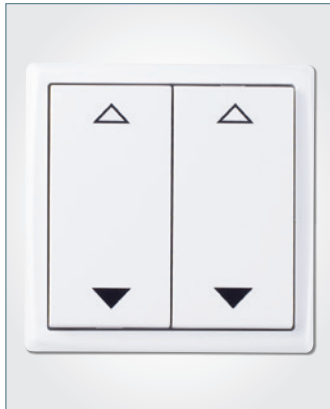
Radio window/door contact				ES1
Item description	Item no.	On stock		€
SRW01	248051	●		67,90
SRW01 BAT	347044			94,70

Accessories				AS1
Item description	Item no.	On stock		€
Coin cell CR1220 (replacement for SRW01 BAT)	347006	●		4,00



## Mini

Lighting and blind control. The self powered wireless technology enables flexible installation on glass and wall plaster via double-sided adhesive pads or screws.



4-channel blinds, pure white



2-channel light, aluminium



2-channel blinds, anthracite

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) ▲▼ (version blinds) special printing available on request
Enclosure	dimensions: 61x61x15 mm incl. frame pure white brilliant aluminium anthracite
Ambient condition	-25...+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	prices including frame





## Mini

Item description: product | number of buttons | model light | colour



Radio control 2-channel light			ES2
Item description	Item no.	€	
Mini 2-channel light pure white brilliant	430647	64,60	
Mini 2-channel light aluminium varnished	430661	64,60	
Mini 2-channel light anthracite	430623	64,60	

Radio control 4-channel light			ES2
Item description	Item no.	€	
Mini 4-channel light pure white brilliant	430838	66,80	
Mini 4-channel light aluminium varnished	430852	66,80	
Mini 4-channel light anthracite	430814	66,80	

Item description: product | number of buttons | model shutters | colour



Radio control 2-channel blind			ES2
Item description	Item no.	€	
Mini 2-channel blind pure white brilliant	430630	64,60	
Mini 2-channel blind aluminium varnished	430654	64,60	
Mini 2-channel blind anthracite	430302	64,60	

Radio control 4-channel blind			ES2
Item description	Item no.	€	
Mini 4-channel blind pure white brilliant	430821	66,80	
Mini 4-channel blind aluminium varnished	430845	66,80	
Mini 4-channel blind anthracite	430807	66,80	



## 55x55

Light and blind control. The wireless technology enables a flexible installation on glass and wall plaster via double-sided adhesive pads or screws.



2-channel blinds, Gira E2 pure white



4-channel light, Gira E2 aluminium



4-channel blinds, Gira E2 anthracite

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Berker	S.1, B.7 glass
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	A 500, AS 500, A plus, A creation
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) ▲▼ (version blinds) special printing available on request
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	when ordering other switch programmes, please specify colour prices incl. frame Gira E2



Item description: number of buttons | model light | switch range | colour

## 55x55



Radio control 2-channel light			ES1
Item description	Item no.	€	
2-channel light Gira E2 pure white	302852	74,50	
2-channel light Gira E2 pure white glossy	363051	74,50	
2-channel light Gira E2 aluminium	302807	74,50	
2-channel light Gira E2 anthracite	302814	74,50	

Radio control 4-channel light			ES1
Item description	Item no.	€	
4-channel light Gira E2 pure white	302883	76,70	
4-channel light Gira E2 pure white glossy	363068	76,70	
4-channel light Gira E2 aluminium	302869	76,70	
4-channel light Gira E2 anthracite	302876	76,70	

Item description: number of buttons | model shutters | switch range | colour



Radio control 2-channel blind			ES1
Item description	Item no.	€	
2-channel blind Gira E2 pure white	302845	74,50	
2-channel blind Gira E2 pure white glossy	364577	74,50	
2-channel blind Gira E2 aluminium	302821	74,50	
2-channel blind Gira E2 anthracite	302838	74,50	

Radio control 4-channel blind			ES1
Item description	Item no.	€	
4-channel blind Gira E2 pure white	302913	76,70	
4-channel blind Gira E2 pure white glossy	364591	76,70	
4-channel blind Gira E2 aluminium	302890	76,70	
4-channel blind Gira E2 anthracite	302906	76,70	

Options		
Item description	€	
Switch ranges Busch-Jaeger Busch-balance® SI	0,00	
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00	
Switch range Gira Esprit	22,30	
Switch ranges stainless steel   glass   aluminium (different manufacturers)	35,10	
Other switch ranges	12,50	

Order example for different items:

**4-channel | shutters | Peha Aura Glas**

**4-channel** = number of buttons

**shutters** = model

**Peha Aura Glas** = switch range Glas



## Busch-Jaeger

Lighting and blind control. The self powered wireless technology enables flexible installation on glass and wall plaster via double-sided adhesive pads or screws.



4-channel blinds,  
future® linear studio white



4-channel light,  
future® linear aluminium silver



2-channel blinds,  
future® linear anthracite

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) ▲▼ (version blinds) special printing available on request
Enclosure	studio white ivory white aluminium silver
Ambient condition	-25...+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	prices including frame frame designs Solo, Future and Axcent at the same price, ask for Carat white (studio) and matt black available on request



Item description: number of buttons | model light | switch range | colour

## Busch-Jaeger



Radio control 2-channel light			ES1
Item description	Item no.	€	
2-channel light Busch-Jaeger future® linear studio white	342971	76,70	
2-channel light Busch-Jaeger future® linear ivory white	342858	76,70	
2-channel light Busch-Jaeger future® linear aluminium silver	338783	76,70	
2-channel light Busch-Jaeger future® linear anthracite	324571	76,70	

Radio control 4-channel light			ES1
Item description	Item no.	€	
4-channel light Busch-Jaeger future® linear studio white	342988	78,90	
4-channel light Busch-Jaeger future® linear ivory white	365529	78,90	
4-channel light Busch-Jaeger future® linear aluminium silver	327404	78,90	
4-channel light Busch-Jaeger future® linear anthracite	324595	78,90	

Item description: number of buttons | model shutters | switch range | colour



Radio control 2-channel blind			ES1
Item description	Item no.	€	
2-channel blind Busch-Jaeger future® linear studio white	469630	76,70	
2-channel blind Busch-Jaeger future® linear ivory white	469661	76,70	
2-channel blind Busch-Jaeger future® linear aluminium silver	469548	76,70	
2-channel blind Busch-Jaeger future® linear anthracite	469593	76,70	

Radio control 4-channel blind			ES1
Item description	Item no.	€	
4-channel blind Busch-Jaeger future® linear studio white	469647	78,90	
4-channel blind Busch-Jaeger future® linear ivory white	469685	78,90	
4-channel blind Busch-Jaeger future® linear aluminium silver	469586	78,90	
4-channel blind Busch-Jaeger future® linear anthracite	469609	78,90	

Options		
Item description	€	
Switch ranges Busch-Jaeger solo®   Busch-axcent®	0,00	

Order example for different items:

**4-channel | shutters | Busch-Jaeger solo®**

**4-channel** = number of buttons

**shutters** = model

**Busch-Jaeger solo®** = switch range Glas



## Jung

Lighting and blind control. The self powered wireless technology enables flexible installation on glass and wall plaster via double-sided adhesive pads or screws.



4-channel light, LS990 alpin white



2-channel light, LS990 light grey



4-channel blinds, LS990 white

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pressing the switches
Switch range Jung	LS 990
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	2-channel (1 switch) 4-channel (2 switches)
Labelling	O, I (version light) ▲▼ (version blinds)
Enclosure	white alpin white light grey
Ambient condition	-25...+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	prices incl. frame LS990 LS990 aluminium varnished and stainless steel varnished on request. Switch programme LS-design on request



Item description: number of buttons | model light | switch range | colour

## Jung



Radio control 2-channel light			ES1
Item description	Item no.	€	
2-channel light Jung LS 990 white	435390	108,00	
2-channel light Jung LS 990 alpin white	435376	108,00	
2-channel light Jung LS 990 light grey	435413	108,00	

Radio control 4-channel light			ES1
Item description	Item no.	€	
4-channel light Jung LS 990 white	435475	112,00	
4-channel light Jung LS 990 alpin white	435451	112,00	
4-channel light Jung LS 990 light grey	435499	112,00	

Item description: number of buttons | model shutters | switch range | colour



Radio control 2-channel blind			ES1
Item description	Item no.	€	
2-channel blind Jung LS 990 white	435406	108,00	
2-channel blind Jung LS 990 alpin white	435383	108,00	
2-channel blind Jung LS 990 light grey	435420	108,00	

Radio control 4-channel blind			ES1
Item description	Item no.	€	
4-channel blind Jung LS 990 white	435482	112,00	
4-channel blind Jung LS 990 alpin white	435468	112,00	
4-channel blind Jung LS 990 light grey	435505	112,00	



Hand-held



## Hand-held

The EasySens® hand-held switch provides remote function for switch signals based on the self powered EnOcean technology.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz, 315 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	when pushing the buttons
Control functions	actuation force 7 N actuation range 2 mm operating cycle quantity > 50.000
No. of buttons	4-channel (4 buttons)
Labelling	A, B, C, D
Enclosure	black
Ambient condition	-25..+65 °C, max. 85% rH non-condensing,

Hand-held switch		ES1
Item description	Item no.	€
Hand-held transmitter 4 channel	314602	98,70



SR-KCS



## SR-KCS

Wireless switch for key card activation for regulation of lighting and air-conditioning applications in room control. The self powered wireless technology enables a flexible installation on glass and wall plaster via double-sided adhesive pads or screws.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Power supply	maintenance-free, electrodynamic energy generator
Transmission interval	at status change
Control functions	operating cycle quantity > 50.000
Enclosure	PC, pure white
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil (included) or screws

Wireless switch		ES2
Item description	Item no.	€
SR-KCS	573573	81,30



# EasySens® Receiver

Innovative self-powered wireless technology generates energy by means of harvesting ambient light or motion. Interoperable, cost-effective and energy-efficient solutions in building automation is available using our wireless sensor system EasySens®.



## Sample applications

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4

1



2



3



5



## » BENEFITS

- » Communication without batteries or cables
- » Interoperable
- » Energy-efficient control of heating and lighting
- » High working and learning comfort through air conditioning and blind-control as required



**SR04 CO2**

Room sensor CO2/temperature/  
rel. humidity  
Available with display and traffic  
light function



**SR04**

Surface-mounted wireless room  
sensor for temperature & rel. humidity  
Available with various control  
elements and features



**Mini**

Wireless switch 2-/4-channel  
lighting/blinds  
Available in various colours



**STC-DOB / STC-PLUS 4DO**

Universal receiver with 8 digital outputs, with  
expansion module STC-PLUS 4DO for control of  
heating/cooling/ fan coils, for switching lights/  
blinds, signal contact and more.



**STC-DO / SRC-AO**

Flush-mounted receiver (24 V or 230 V) with digital  
or analogue outputs for control of thermostats,  
humidistats, fans or temperature, for switching of  
lights or blinds, and more



## CONCENTRATION

All devices used communicate wirelessly via EnOcean technology. Temperature, set point, air quality, occupancy and switch signals for lighting and blinds, are transmitted via bidirectional receivers, STC-DOB/ STC-PLUS 4DO resp. STC-DO/ SRC-AO as standalone with local digital or analogue outputs or to superior communication protocols such as KNX, BACnet, LON or Modbus. This system allows a substantial increase in comfort along with optimum energy savings.



STC65-RS485 Modbus

## STC65-RS485 Modbus

»»» SmartACK



Bidirectional gateway with interface RS485, Modbus protocol, IP42-enclosure. For evaluation of up to 32 EasySens® sensors or wireless switches. Transmission of field-programmed telegrams to 32 addresses. Incl. ext. transmitting/receiving antenna (2.5 m).

### TECHNICAL DATA

Network technology	RS485 Modbus
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 928 MHz, 315 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receive channels	32 (Rx)
Transmit channels	32 (SAB) 32 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,6 W (24 V =)   1,5 VA (24 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding software for configuration (freeware via download)
Notes	up to 15 SmartACKNOWLEDGE devices (SmartACK) magnetic antenna plate recommended to improve radio coverage

### Gateway – EnOcean ↔ RS485 Modbus

ES2

Item description	Item no.	On stock	€
STC65-RS485 Modbus	385695	⊕	241,90

### Accessories

AS1

Item description	Item no.	On stock	€
Antenna extension 10 m	257206	⊕	56,10
Antenna extension 20 m	257213	⊕	68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕	14,30



STC65-RS485 EVC

## STC65-RS485 EVC

SmartACK



Bidirectional gateway with serial interface RS485, bi-directional interface „Multiple Access“, IP42-enclosure. For connection of up to 32 EasySens® sensors or wireless switches to different controllers with RS485 interface. Transmission of field-programmed telegrams to 127 addresses. Incl. ext. transmitting/receiving antenna (2,5 m).

TECHNICAL DATA	
Network technology	RS485 EVC
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receive channels	filter mode: 64 (Rx) Gateway mode: ∞ (Rx)
Transmit channels	filter mode: 128 (Tx) Gateway mode: 128 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,8 W (24 V ~)   2 VA (24 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding software for configuration (freeware via download)
Notes	up to 15 SmartACKNOWLEDGE devices (SmartACK) magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ↔ RS485 EVC				ES2
Item description	Item no.	On stock		€
STC65-RS485 EVC	393898	⊕		241,90

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	⊕		56,10
Antenna extension 20 m	257213	⊕		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕		14,30



STC65-FTT LON



## STC65-FTT LON

SmartACK



Bidirectional gateway for EnOcean-based Sensors and actuators as well as controllers and control systems with LON interface. The STC65-FTT enables the receipt and transmission of radio telegrams corresponding to the EnOcean communication protocol. With predefined sensor objects (sensor, switch, ...) and corresponding output variables (SNVT) for communication in a LON system.

### TECHNICAL DATA

Network technology	LON FT (free topology)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receive channels	11 (Rx)
Transmit channels	11 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,5 W (24 V =)   0,82 VA (24 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP42 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding incl. plug-in for turbo LONmaker
Notes	up to 4 SmartACKNOWLEDGE devices (SmartACK) magnetic antenna plate recommended to improve radio coverage

### Gateway – EnOcean ↔ FTT LON

ES2

Item description	Item no.	On stock	€
STC65-FTT LON SmartACK	616638	⊕	289,70
STC65-FTT LON	393904	⊕	289,70

### Accessories

AS1

Item description	Item no.	On stock	€
Antenna extension 10 m	257206	⊕	56,10
Antenna extension 20 m	257213	⊕	68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕	14,30



STC04-FTT LON



## STC04-FTT LON

SmartACK



Bidirectional gateway for EnOcean-based sensors and actuators as well as controllers and control systems with LON interface. The STC04-FTT enables the receipt and transmission of radio telegrams corresponding to the EnOcean communication protocol. With predefined sensor objects (sensor, switch, ...) and corresponding output variables (SNVT) for communication in a LON system.

TECHNICAL DATA	
Network technology	LON FT (free topology)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	external
Data transmission	bidirectional, SmartACK (SmartACKNOWLEDGE)
Receive channels	11 (Rx)
Transmit channels	11 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,5 W (24 V =)   0,82 VA (24 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	surface mounted on flush-mounting box (Ø=55 mm)
Delivery contents	incl. plug-in for turbo LONmaker

Gateway – EnOcean ↔ FTT LON			ES2
Item description	Item no.		€
STC04-FTT LON SmartACK	616645		258,10
STC04-FTT LON	415118		258,10



STC-BACnet IP



## STC-BACnet IP



Bidirectional gateway for EnOcean-based sensors and actuators as well as controllers and control systems with BACnet IP interface inclusive external receiving antenna (2,5 m), prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715. To be configured via EasySens airConfig software tool. Details of the communication protocol are available in the software documentation.

### TECHNICAL DATA

Network technology	BACnet IP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional, airConfig ready
Receive channels	no limit
Transmit channels	128 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 3 W (24 V =)   5 VA (24 V ~)
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding software for configuration (freeware via download)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz) magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ↔ BACnet IP			ES1
Item description	Item no.		€
STC-BACnet IP	593632		418,70

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	☹		56,10
Antenna extension 20 m	257213	☹		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	☹		14,30
airConfig (freeware, via download)				0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☹		100,80





SRC65-BACnet MS/TP



## SRC65-BACnet MS/TP

EnOcean to BACnet MSTP gateway/receiver for radio sensors and switches communicating on EnOcean radio technology and controllers with BACnet MS/TP interface. Protocol details are available in the software documentation.

TECHNICAL DATA	
Network technology	BACnet MS/TP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external receiving antenna with magnetic holding
Data transmission	unidirectional
Receive channels	32 (Rx)
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 1 W (24 V =)   1,3 VA (24 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP42 according to EN 60529
Cable entry	M20 for wire max. $\varnothing = 8$ mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery contents	incl. external receiving antenna 2,5 m with magnetic holding
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean -> BACnet MS/TP			ES1
Item description	Item no.		€
SRC65-BACnet MS/TP	396431		262,80

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	⊕		56,10
Antenna extension 20 m	257213	⊕		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕		14,30



STC-IoT



## STC-IoT

Bidirectional radio gateway for the networking of EnOcean sensors and actuators with common cloud applications (e.g. IBM Watson). The new EnOcean Over-IP standard enables the seamless integration of EnOcean devices into the Internet of Things (IoT) via JSON stream- or line-oriented (Command-Line) interface. Browser interface for simple commissioning and administration of the devices. Graphical, data-flow-oriented processing via integrated Node-RED editor (<https://nodered.org/>) enables simple, rule-based evaluations such as SMS/e-mail alerting when thresholds are exceeded. Easy integration of EasySens devices into online applications. Ideally suited for connection to IP based controller and display systems.

TECHNICAL DATA	
Network technology	TCP/IP
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional
Receive channels	no limit
Transmit channels	128 (Tx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 3 W (24 V =)   5 VA (24 V ~)
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding software for configuration (freeware via download)
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ↔ IP IoT			ES1
Item description	Item no.		€
STC-IoT	669320		395,00

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	☺		56,10
Antenna extension 20 m	257213	☺		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	☺		14,30



STC-Ethernet



## STC-Ethernet

Bidirectional gateway with IP/Ethernet interface for evaluation of up to 30 EasySens sensors or wireless switches. Incl. external transmitting/receiving antenna (2,5 m).

TECHNICAL DATA	
Network technology	Ethernet, data port: RJ45
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional
Receive channels	filter mode: 30 (Rx) Gateway mode: ∞ (Rx)
Transmit channels	filter mode: 128 (Tx) Gateway mode: 128 (Tx)
Power supply	80..240 V ~ 15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 5 VA (..240 V ~)
Display	LED „Valid“ to show valid EnOcean telegrams
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external receiving antenna 2,5 m with magnetic holding software for configuration (freeware via download)
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ↔ Ethernet				ES2
Item description	Item no.	On stock		€
STC-Ethernet 80..240 V	403191	⊕		307,50
STC-Ethernet 24 V	550109	⊕		307,50

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	⊕		56,10
Antenna extension 20 m	257213	⊕		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕		14,30



STC-KNX



## STC-KNX

Bidirectional gateway for connection of up to 32 EasySens sensors or wireless switches to the EIB/KNX-Bus. The device offers additional control functions, which can be set to: switch and dim, blind UP/DOWN, presence button/switch, set point adjustment, stage switch, humidity sensor, window contact/handle, binary input, light sensor, motion sensor

### TECHNICAL DATA

Network technology	KNX (TP)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Data transmission	bidirectional
Receive channels	32 (Rx)
Transmit channels	32 (Tx)
Power supply	supply via BUS
Power consumption	max. 12 mA
Display	graphic display monochrome (internal)
Enclosure	PC, white
Protection	IP20 according to EN 60529
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-5..+45 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)
Delivery contents	software for configuration (freeware via download)

### Gateway – EnOcean ↔ KNX

ES2

Item description	Item no.	On stock	€
STC-KNX	535076	●	420,00



STC-dS



## STC-dS

Bidirectional gateway to extend a digitalSTROM system with EasySens® devices like sensors, units for controlling indoor climate, valve actuators, radio switches, wireless window contacts and window handles. The devices are integrated seamlessly and for the user they are used as easily as standard digitalSTROM components. The connection is made via ethernet network connection.

TECHNICAL DATA	
Network technology	digitalSTROM (dS)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional
Enclosure	PC, ABS, white
Protection	IP20 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding
Notes	magnetic antenna plate recommended to improve radio coverage

Gateway – EnOcean ↔ digitalSTROM		ES2
Item description	Item no.	€
STC-dS	637442	398,00



STC-DO 24 V



STC-DO 240 V



## STC-DO

Receiver with digital outputs. Various types for Heating (PWM), Heating ON/OFF, signal contact, humidistat control, heating/cooling (PWM) or fan stage control. Flush mounted.

### TECHNICAL DATA

Output switch contact	changeover contact, non-floating 24 V: load max. 3 A 240 V: load max. 10 A
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	24 V: 15..24 V = (±10%) or 24 V ~ (±10%) 240 V: 100..240 V ~
Power consumption	24 V: typ. 1,5 W (24 V =)   3,4 VA (24 V ~) 240 V: typ. 9,8 VA
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

### Wireless receiver – multifunctional actor

ES2

Item description	Item no.	€
STC-DO airConfig 24 V	593731	139,60
STC-DO airConfig 100..240 V	593748	139,60

### Accessories

Item description	Item no.	On stock	€
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704		100,80



STC-DO Light



## STC-DO Light

Flush mounted receiver module for EnOcean switch telegrams. For switch control of Lighting applications.

TECHNICAL DATA	
Output switch contact	max. 10 A (230 V)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional
Power supply	100..240 V ~
Power consumption	standby <0,5 W
Functions	lighting, fan control, switch actuator, staircase light
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+40 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

Wireless receiver – switch actuator light		ES2
Item description	Item no.	€
STC-DO Light 230 V	568371	139,60



STC-DO Blind



## STC-DO Blind

Flush mounted receiver module for EnOcean switch telegrams. For switch control of blinds.

### TECHNICAL DATA

Output switch contact	max. 1 A (230 V)
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional
Power supply	100..240 V ~
Power consumption	standby <0,5 W
Functions	blinds/shutter, switch actuator, slat changing
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+40 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

Wireless receiver – switch actuator blind		ES2
Item description	Item no.	€
STC-DO Blind 230 V	568364	139,60





## SRC-AO Climate

Unidirectional flush mounted thermostat temperature control for room applications.



SRC-AO Climate



TECHNICAL DATA	
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	internal receiving antenna
Data transmission	unidirectional
Receive channels	32 (Rx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 1 W (24 V =)   1,5 VA (24 V ~)
Functions	V: heating or cooling VV: heating and cooling continuously 0..10 V
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

Wireless receiver – climate actuator 0..10 V		ES2
Item description	Item no.	€
SRC-AO Climate V	508278	139,20
SRC-AO Climate VV	508285	163,20



SRC-AO Dim



## SRC-AO Dim

Unidirectional flush mounted device for control of one 0..10 V dim actuator / driver connection of up to 32 wireless switches.

### TECHNICAL DATA

Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	internal receiving antenna
Data transmission	unidirectional
Receive channels	32 (Rx)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 1 W (24 V =)   1,5 VA (24 V ~)
Functions	V: 1-fold dim actuator lighting VV: 2-fold dim actuator lighting
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

### Wireless receiver – dim actuator 0..10 V

ES2

Item description	Item no.	€
SRC-AO Dim V	499606	139,60
SRC-AO Dim VV	502931	163,20



SRC-AO Multi



## SRC-AO Multi

Multi functional actuator with 0..10 V output of different values/enOcean sensors e.g. temperature, humidity, setpoint).

### TECHNICAL DATA

Output voltage	V: 1x 0..10 V VV: 2x 0..10 V
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	internal receiving antenna
Data transmission	unidirectional
Receive channels	32 (Rx)
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 1 W (24 V =)   1,5 VA (24 V ~)
Functions	multi actuator: output of various values (e.g. temperature, set-point, humidity, actuating variable, dimming value)
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box ( $\varnothing=55$ mm)

### Wireless receiver – multi-functional actuator 0..10 V

Item description	Item no.	ES2 €
SRC-AO Multi V	508315	139,60
SRC-AO Multi VV	508322	163,20



STC-D08



STC-D08 with extension module  
STC-PLUS 4DO

## STC-D08

Bidirectional receiver with 8 digital outputs (or 12 with extension module STC-Plus 4DO). For heating/cooling control, fan coil control, control of lights and blinds etc. Incl. ext. antenna (2,5 m).

### TECHNICAL DATA

Output switch contact	8x relay with change-over contact (volt free contact), 230 V ~ / 6 A, 24 V = / 6 A 12x relay with additional module STC-PLUS 4DO
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional
Power supply	100..240 V ~ 15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 2,0 W (24 V =)   3,5 VA (24 V ~)
Functions	lighting, blinds/shutter, heating/cooling (PI), fancoil controller, heating ON/OFF, heating with PWM output, heating/cooling with PWM output, signalling contact, hygrostat controller, fan release
Display	graphic display monochrome
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+60 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding
Notes	magnetic antenna plate recommended to improve radio coverage



**STC-D08**

Wireless receiver – multi relay 100..240 V			ES2
Item description	Item no.		€
STC-D08 100..240 V type heating/cooling	490030		324,10
STC-D08 100..240 V type fancoil, heating/cooling	490047		324,10
STC-D08 100..240 V type switch actuator	490054		324,10

Wireless receiver – multi relay 24 V			ES2
Item description	Item no.		€
STC-D08 24 V type heating/cooling	564458		324,10
STC-D08 24 V type fancoil, heating/cooling	631495		324,10
STC-D08 24 V type switch actuator	561273		324,10

Extension module			ES2
Item description	Item no.		€
STC-PLUS 4DO	517690		145,40

Accessories			AS1
Item description	Item no.	On stock	€
Antenna extension 10 m	257206	●	56,10
Antenna extension 20 m	257213	●	68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	●	14,30



SRC-ADO



## SRC-ADO

Universal receiver with 4 analogue outputs 0..10 V and up to 4 floating relay outputs. For connection of EasySens sensors, switches, window contacts or window handles. The device can be individually configured (according to type) to be used as fancoil controller with changeover function, PI controller for heating/cooling, electrical actuation 1..10 V for dimmer or standardised interface for EnOcean sensors and analogue or digital outputs.

TECHNICAL DATA	
Output voltage	4x 0..10 V
Output switch contact	2DA: 2x changeover contact, floating 4DA: 4x changeover contact, floating
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	unidirectional
Power supply	100..240 V ~ 15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 3,5 W (24 V =)   6,5 VA (24 V ~) max. 5 VA (..240 V ~)
Functions	lighting, blinds/shutter, heating/cooling (PI), fancoil controller, heating ON/OFF, heating with PWM output, heating/cooling with PWM output, signalling contact, hygrostat controller, fan release
Switching values	8 A resistive load (24 V =/~   230 V ~), 2 A inductive load (230 V ~)
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+60 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding
Notes	magnetic antenna plate recommended to improve radio coverage

## SRC-ADO

Wireless receiver – multi 0..10 V   relay 2DA 80..240 V			ES2
Item description	Item no.		€
SRC-ADO 4AA/2DA 80..240 V type dimming/heating/cooling	267502		314,60
SRC-ADO 4AA/2DA 80..240 V type fancoil, change-over	423236		314,60

Wireless receiver – multi 0..10 V   relay 4DA 80..240 V			ES2
Item description	Item no.		€
SRC-ADO 4AA/4DA 80..240 V type dim/heating/cooling	273275		338,20
SRC-ADO 4AA/4DA 80..240 V type fancoil, change-over	423243		338,20

Wireless receiver – multi 0..10 V   relay 2DA 24 V			ES2
Item description	Item no.		€
SRC-ADO 4AA/2DA 24 V type dimming/heating/cooling	420105		314,60
SRC-ADO 4AA/2DA 24 V type fancoil, change-over	494816		314,60

Wireless receiver – multi 0..10 V   relay 4DA 24 V			ES2
Item description	Item no.		€
SRC-ADO 4AA/4DA 24 V type dimming/heating/cooling	455428		338,20
SRC-ADO 4AA/4DA 24 V type fancoil, change-over	502955		338,20

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	●		56,10
Antenna extension 20 m	257213	●		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	●		14,30



STC-MSG Server



## STC-MSG Server

The STC-MSG Server is a wireless controlled heating/cooling circuit controller and designed for evaluation of wireless room sensors with control of up to 8 / 16 SAB0x EnOcean actuators. For efficient energy saving a time switch is integrated. Furthermore, it is possible to make use of the function „energy stop“ by seamlessly connecting a wireless window contact SRW0x and wireless window handle SRG0x, i.e. if the window is opened, the SAB0x closes the valves. Parameterisation of the individual functions is made via an easy to handle configuration menu.

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional
Receive channels	8/16 (Rx)
Transmit channels	8/16 (Tx)
Power supply	100..240 V ~
Power consumption	typ. 3,5 VA
Display	graphic display monochrome
Enclosure	ABS, light grey
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding
Notes	magnetic antenna plate recommended to improve radio coverage

Heating/cooling circuit controller			ES2
Item description	Item no.		€
STC-MSG server 8 channel	501590		269,40
STC-MSG server 16 channel	507080		306,40

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	☺		56,10
Antenna extension 20 m	257213	☺		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	☺		14,30





STC-MSG Server UP



## STC-MSG Server UP



Wirelessly controlled heating regulator for control of up to 5 SAB0x valve actuators within one room in connection with wireless room sensors. Furthermore, it is feasible to make use of the function „energy stop“ by seamlessly connecting window contacts SRW0x and handles SRG0x to the SAB05, resulting in an automated closing of the valves, if a window is open. STC-MSG Server UP can learn in the following sensors: 5 EnOcean valve actuators (SAB05), 1 room operating sensor type SR04 x, SR06 x or SR07 x, 10 digital input modules SR65DI, EnOcean switches, motion sensors (e.g. SR-MDS, SR-MOW), 20 window contacts SRW0x or window handles SRG0x.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	100..240 V ~
Power consumption	max. 2 VA (100..240 V ~)
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Heating/cooling circuit controller		ES2
Item description	Item no.	€
STC-MSG server UP	550048	132,70

Accessories			
Item description	Item no.	On stock	€
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☉	100,80



SAB+



## SAB+

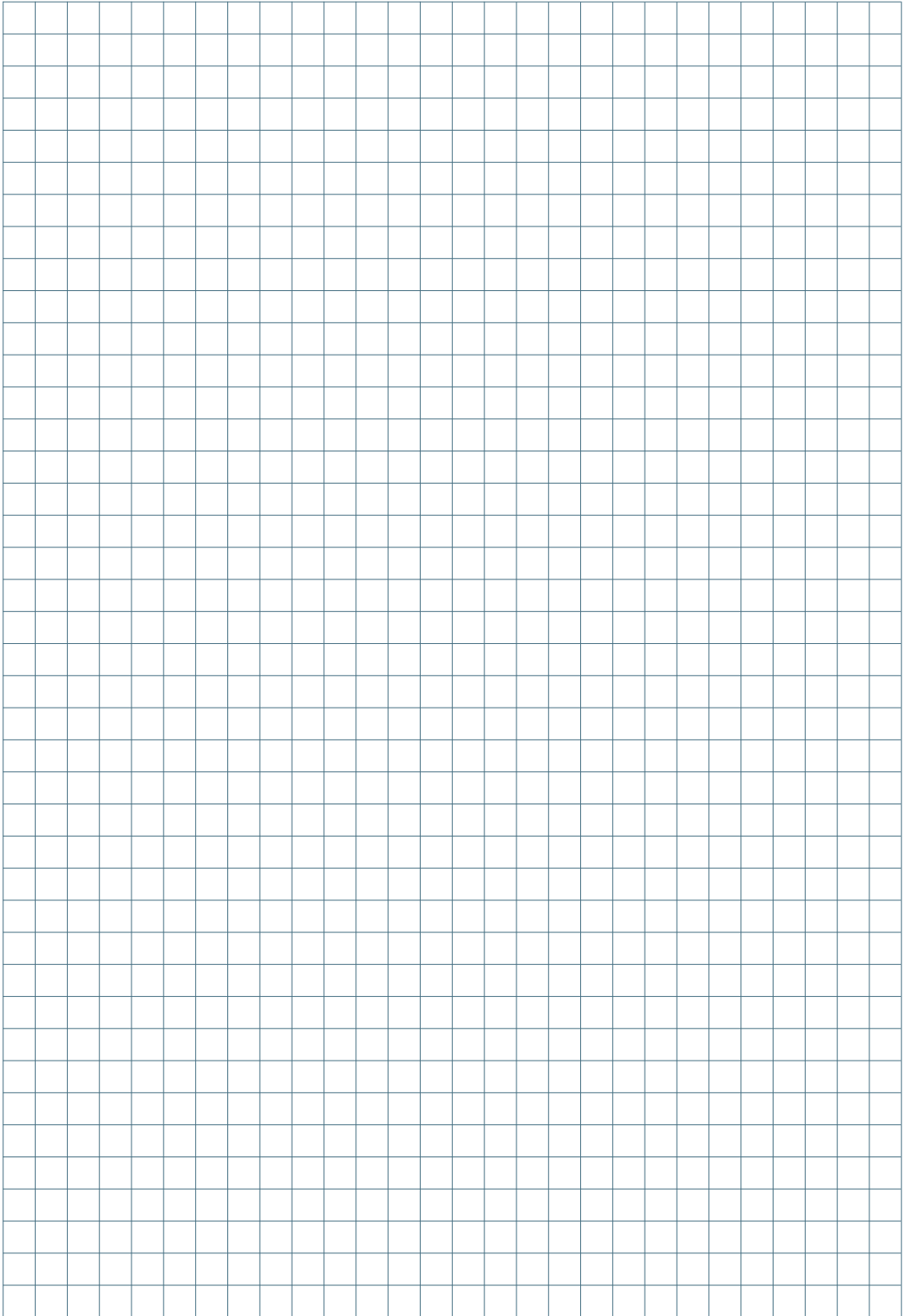


Battery-free wireless (EasySens® technology) valve actuator for individual room control. The new electronic heating valve utilizes the heat dissipation between the radiator and the space to gain electrical energy by means of a thermoelectric generator.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	maintenance-free thermal energy harvesting
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,5 °C (typ. at 25 °C)
Measuring intervall	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Transmission interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Functions	radio interface actuator operation self-control mode automatic closing point control frost protection function
Display	status-LED, multi-colored
Enclosure	PC, pure white, aluminium
Protection	IP40 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted, M30 x 1,5
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz) with integrated, digital temperature transmitter Regulation time: 0,24 mm/s pulling load: >80 N

Battery-free valve actuator EnOcean with thermal energy harvesting				ES2
Item description	Item no.	On stock	€	
SAB+	669108	🌀	198,00	

Accessories				AS1
Item description	Item no.	On stock	€	
Dismounting protection SAB	595605	🌀	16,90	
airConfig (freeware, via download)			0,00	
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	🌀	100,80	





SAB05



SAB05



## SAB05



Wireless valve actuator for bidirectional EnOcean communication. The SAB05 combines with message server and enocean transmitter.

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	3 batteries (type AA)
Measuring range temp.	0..+40 °C
Accuracy temperature	±0,5 °C (typ. at 25 °C)
Measuring intervall	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Transmission interval	every 2..20 min., configured via airConfig (in 2 min. steps) or via button
Functions	radio interface, actuator operation, self-control mode, automatic closing point control, frost protection function
Display	status-LED, multi-colored
Enclosure	PC, pure white
Protection	IP40 according to EN 60529
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	screw mounted, M30 x 1,5 optional adapters available
Delivery contents	incl. 3 batteries (type AA)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz) with integrated, digital temperature transmitter Regulation distance: max. 3 mm (automatic adaption by initialisation) Regulation time: 10 s/mm, pulling load: 100 N nominal

## SAB05

Valve actuator			ES2
Item description	Item no.	On stock	€
SAB05	513753	☉	143,30

Accessories			AS1
Item description	Item no.	On stock	€
Dismounting protection SAB	595605	☉	16,90
Battery protection SAB05, type Z220	595612	☉	18,50
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license - net price)	566704	☉	100,80

Accessories – valve adapters			AS1
Item description	Item no.	On stock	€
Valve adapter SAB for Giacomini Z810 (22,6mm)	634724	☉	12,40
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978	☉	12,40
Valve adapter SAB for Danfoss Z807	595070	☉	12,40
Valve adapter SAB for Danfoss RS2000 Z802	589093	☉	12,40
Valve adapter SAB for Danfoss RAV Z803	589109	☉	12,40
Valve adapter SAB for Danfoss RAV-L Z804	589116	☉	12,40
Valve adapter SAB for Danfoss Z800	589079	☉	12,40
Valve adapter SAB for Danfoss Z801	589086	☉	12,40
Valve adapter SAB for Danfoss Z805	615181	☉	12,40
Further valve adapters on request			



SRE-Repeater



## SRE-Repeater



The repeater amplifies EnOcean radio signals between sensors and receivers. Typical usage is when sensors are installed out of range or for solving problems in already existing wireless networks. Level 1, Level 2 and Smart Repeating (role-based filters) can be configured via airConfig.

TECHNICAL DATA	
Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz, 315 MHz
Antenna	internal transmitting/receiving antenna external transmitting/receiving antenna with magnetic holding
Data transmission	bidirectional, airConfig ready
Power supply	flex. 15..240 V =/~
Power consumption	typ. 1 VA (15..240 V =/~)
Functions	level-1, level-2, smart-operation rule based, max. 10 rules configured via airConfig
Enclosure	PA6.6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Delivery contents	incl. external transmitting/receiving antenna 2,5 m with magnetic holding (only version with external antenna)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz) magnetic antenna plate recommended to improve radio coverage

Wireless repeater			ES2
Item description	Item no.		€
SRE-Repeater MultiLevel internal ant.	593809		133,70
SRE-Repeater MultiLevel external ant.	593830		153,30

Accessories				AS1
Item description	Item no.	On stock		€
Antenna extension 10 m	257206	☉		56,10
Antenna extension 20 m	257213	☉		68,30
Magnetic antenna holder form L, 180x180 mm (net price)	255097	☉		14,30
airConfig (freeware, via download)				0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	☉		100,80



SRE-Repeater UP



## SRE-Repeater UP



The flush mounted repeater amplifies EnOcean radio signals between sensors and receivers. Typical usage is when sensors are placed out of range or for solving problems in already existing wireless networks. Level 1, Level 2 and Smart Repeating (role-based filters) can be configured via airConfig.

### TECHNICAL DATA

Radio technology	EnOcean (IEC 14543-3-10)
Frequency	868 MHz, optional: 902 MHz
Antenna	internal transmitting/receiving antenna
Data transmission	bidirectional, airConfig ready
Power supply	100..240 V ~
Power consumption	max. 2 VA
Functions	level-1, level-2, smart-operation, rule based, max. 10 rules configured via airConfig
Enclosure	ABS, red
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

Wireless repeater			ES2
Item description	Item no.		€
SRE-Repeater UP MultiLevel internal ant.	556736		112,10

Accessories			
Item description	Item no.	On stock	€
airConfig (freeware, via download)			0,00
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	⊕	100,80



airScan



## airScan



Thermokon airScan consists of an USB transmitter/receiver with windows software to turn a windows personal computer to a field strength measuring tool. Measuring frequency ranges the tool is used to define best routing places for EnOcean transmitter and receiver. airScan gives a quick overview of EnOcean telegrams, reading status, ID, field strength and manufacturer for EnOcean products.

An optional USB extension for optimal positioning of the transmitter/receiver, even at the ceiling is available.

### TECHNICAL DATA

System requirements	the software is available for all Windows- and Apple OS X based computers, min. Windows XP, Adobe Flash, min. USB 2.0
Radio technology	EnOcean (IEC 14543-3-10)
Delivery contents	1x USB-Stick software for configuration (freeware via download)
Notes	USB extension (3 m) for optimal positioning of the transmitter/receiver is available (refer to accessories)

### airScan (EnOcean usb transceiver + license)

Item description	Item no.	On stock	€
airScan (net price)	566704	●	100,80

### Accessories

Item description	Item no.	On stock	€
USB extension 3 m (net price)	574044	●	13,40





airConfig



## airConfig



airConfig enables remote commissioning of EasySens® based products. Remote commissioning is defined as parameterization without direct interaction with the device. airConfig uses the EnOcean based radio technology to parameterize the devices by means of special remote commissioning commands. To use remote commissioning an EnOcean usb transceiver and the free airConfig software are necessary.

### TECHNICAL DATA

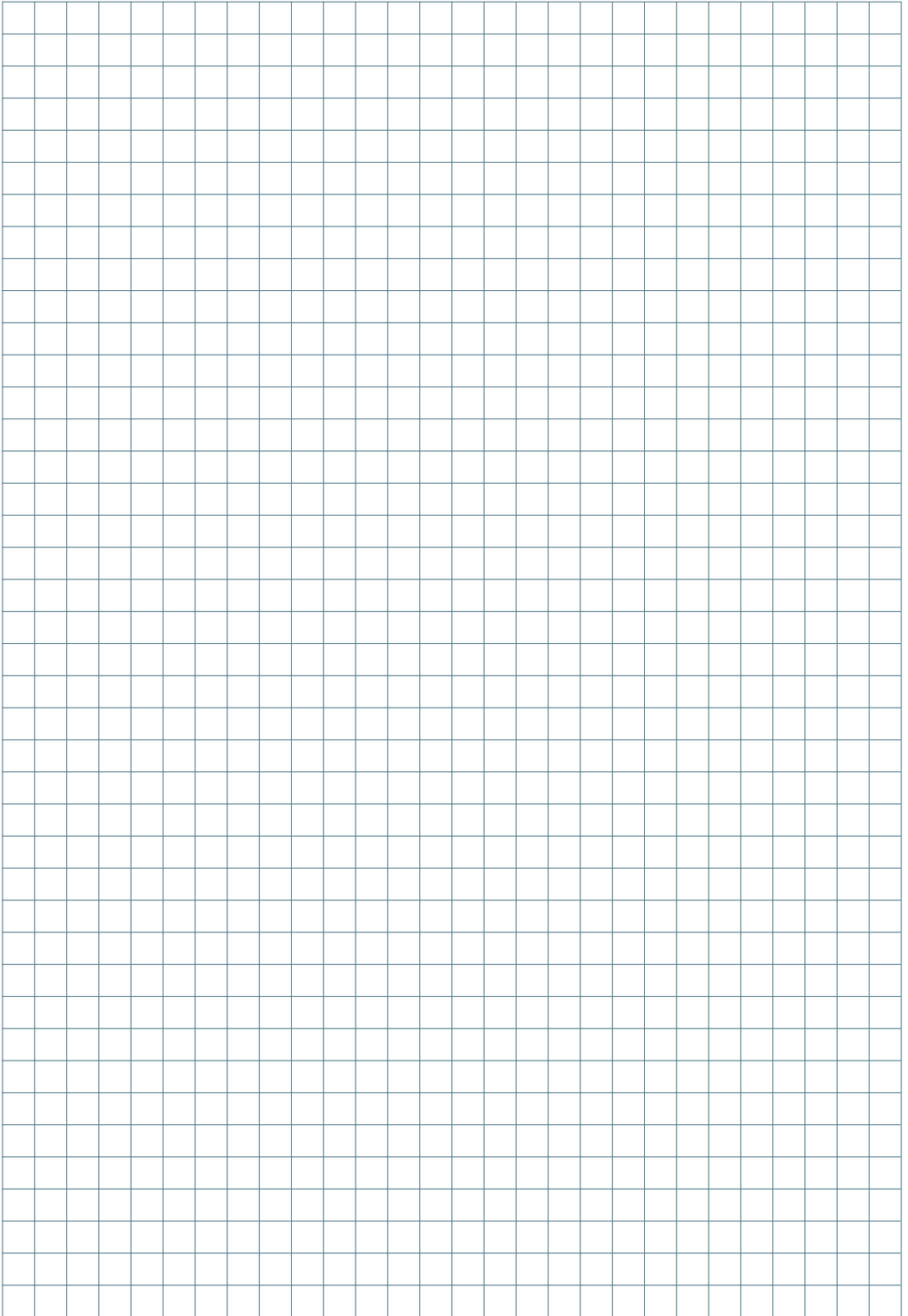
System requirements	the software is available for all Windows- and Apple OS X based computers. It also runs on the Microsoft surface tablet. An EnOcean based USB stick allows the communication to the devices and your network.
Radio technology	EnOcean (IEC 14543-3-10)
Notes	to use the free software airConfig (download) an usb stick, which is able to send and receive EnOcean telegrams, is necessary. We offer such a stick with the package airScan (item No. 566704 for 868 MHz)

### airConfig

Item description	Item no.	€
airConfig (free of charge)		0,00

### Accessories

Item description	Item no.	On stock	€
EnOcean usb transceiver for airConfig/airScan (incl. license – net price)	566704	●	100,80



# Room Operating Units

Our room operating units are used for temperature detection and integrated operation of HVAC, lighting and blinds for single room control. A variety of sophisticated and high-end designs and optional features are available.



## Sample applications 125

### Premium Design

thanos	High-end room operating unit	128
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WRF06 LCD	Room operating unit (4 buttons)	134

### Flush-mounting

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### Surface mounting

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LCF	Fan coil room thermostat	162
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LCA D	Room thermostat heating	165



## » BENEFITS

- » Compatible with multiple BUS systems
- » Various control elements to cover a wide range of applications
- » Flexible design options with various colours and design frames
- » Custom labels/engravings



**1**



**2**

**thanos L**

Touch screen room operating unit,  
available with wireless EnOcean,  
BUS and EnOcean + BUS only

**WRF06 LCD**

Flush-mounted room operating unit for flexible room control, compatible to various design frames of numerous manufacturers



## PERFECT WORKING CONDITIONS

The multifunctional room operating units combine high-end design along with sophisticated technology: Integrated sensors for temperature and humidity, switching signals for lighting and blinds, touch-sensitive surfaces in custom design variations. Communications through standard network technologies: Create the perfect working environment.



## » BENEFITS

- » Compatible with multiple BUS systems
- » Various control elements to cover a wide range of applications
- » Flexible design options with various colours and design frames
- » Custom labels/engravings



**WRF08**

Multifunctional room operating unit used for operation of HVAC, control of lighting and blinds, available in various colours and numerous design frames

1



2

**WRF07**

Flush-mounted room operating unit, compatible with various switch designs from many manufacturers, numerous control elements and custom labels are available.



## HIGH LEVEL COMMUNICATION

The multifunctional room operating units combine high grade design along with sophisticated technology: Integrated sensors for temperature and humidity, switching signals for lighting and blinds, touch-sensitive surfaces in custom design variations. Communications via standard network technology: Create the perfect working environment.



## thanos

Using exclusive materials, the thanos touch screen room operating unit has integrated temperature and optional humidity sensors for operation of HVAC, lighting and blind control. Integrated quality optics, the thanos is ideal for high end design applications. Configurable touch buttons allow for a flexibility in terms of individual room controls.



thanos S black



thanos L white



thanos LQ white

TECHNICAL DATA	
Measuring values	temperature, humidity (optional)
Network technology	KNX (TP) LON FT (free topology) RS485 Modbus digitalSTROM (dS)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) dS: 230 V ~ (±10%)
Power consumption	typ. 2,0 W (24 V =)   4,0 VA (24 V ~) dS: typ. 4,0 VA (230 V ~)
Measuring range temp.	0..+50 °C, dS: 0..+40 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C)
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Inputs	digital, 4x individual configuration for window contact, dew point guard, key card switch, room frequency, alarm, event
Control functions	occupancy signalling, light ON/OFF/DIM setup scenarios, blinds UP/DOWN/SET fan stages, setpoint dS: light, shadow, climate, audio, video, come and go, app button
Clip	anodized aluminium
No. of buttons	type L/LQ min. 8 capacitive touch sensor buttons
Labelling	type L/LQ flexible insert (for up to 8 touch buttons below/beside clip)
Display	TFT 3,5", 320x640 px, capacitive touch technology showing room temperature, setpoint, operation mode, fan stage, occupancy, alarm, date and time, ... ECO note (several steps, red to green; not available for LON and KNX) graphic and photo: Instead of date and time individual colour graphics (175x50 or 320x240 pixel) can be shown (e.g. company logo or hotel name; not available for LON and KNX) dS: showing room temperature, setpoint, operation mode, fan stage, occupancy
Colour	white or black
Enclosure	PC and glass
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing dS: 0..+40 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)
Notes	you'll find the software description at <a href="http://www.thermokon.com">www.thermokon.com</a>





for thanos without radio please refer to 'Room Operating Units'

## Highlights

(for type RS485 Modbus)

### functions / button configuration

Scene buttons / scene channels (0..9), operating mode (heating, cooling, dehumidifying, off), along with the previous universal on/off, there is now a new universal +/-.

### ECO display

Several stages from red to green

# thanos

### Graphics / images

Customer specific graphics can be illustrated in the upper display area (e.g. company logo or hotel name).

Item description: product | model | colour | BUS



Touch screen room operating unit temperature - KNX			RU1
Item description	Item no.	Regulator	€
thanos L black KNX	472067	✓	606,10
thanos L white KNX	472050	✓	606,10
thanos LQ black KNX	472081	✓	606,10
thanos LQ white KNX	472074	✓	606,10
thanos S black KNX	472104	✓	561,80
thanos S white KNX	472098	✓	561,80



Touch screen room operating unit temperature - LON			RU1
Item description	Item no.	Regulator	€
thanos L black LON	471749	✓	606,10
thanos L white LON	471725	✓	606,10
thanos LQ black LON	471763	✓	606,10
thanos LQ white LON	471756	✓	606,10
thanos S black LON	471787	✓	561,80
thanos S white LON	471770	✓	561,80



Touch screen room operating unit temperature - RS485 Modbus			RU1
Item description	Item no.	Regulator	€
thanos L black RS485 Modbus	472302	✓	567,70
thanos L white RS485 Modbus	472296	✓	567,70
thanos LQ black RS485 Modbus	472326	✓	567,70
thanos LQ white RS485 Modbus	472319	✓	567,70
thanos S black RS485 Modbus	472340	✓	523,10
thanos S white RS485 Modbus	472333	✓	523,10

## thanos



Touch screen room operating unit temperature + humidity – KNX				RU1
Item description	Item no.	Regulator	€	
thanos rH L black KNX	472111	✓	670,70	
thanos rH L white KNX	448550	✓	670,70	
thanos rH LQ black KNX	472135	✓	670,70	
thanos rH LQ white KNX	472128	✓	670,70	
thanos rH S black KNX	472159	✓	626,10	
thanos rH S white KNX	472142	✓	626,10	



Touch screen room operating unit temperature + humidity – LON				RU1
Item description	Item no.	Regulator	€	
thanos rH L black LON	471800	✓	670,70	
thanos rH L white LON	471794	✓	670,70	
thanos rH LQ black LON	471824	✓	670,70	
thanos rH LQ white LON	471817	✓	670,70	
thanos rH S black LON	471848	✓	626,10	
thanos rH S white LON	471831	✓	626,10	



Touch screen room operating unit temperature + humidity – RS485 Modbus				RU1
Item description	Item no.	Regulator	€	
thanos rH L black RS485 Modbus	472364	✓	632,30	
thanos rH L white RS485 Modbus	472357	✓	632,30	
thanos rH LQ black RS485 Modbus	472388	✓	632,30	
thanos rH LQ white RS485 Modbus	472371	✓	632,30	
thanos rH S black RS485 Modbus	472401	✓	587,70	
thanos rH S white RS485 Modbus	472395	✓	587,70	



Touch screen room operating unit temperature + humidity – digitalSTROM				RU1
Item description	Item no.	Regulator	€	
thanos rH S black dS	613446	✓	626,10	
thanos rH S white dS	613439	✓	626,10	

### Accessories

Item description	Item no.	On stock	€	
Software/Plug-In for configuration (free)			0,00	

thanos

Design examples



thanos L black



thanos L white



thanos L white RS485 Modbus



thanos rH S white dS



## WRF08

WRF08 Room operating unit for temperature measurement and operation of HVAC, Lighting and blind control. High quality materials and design available with various glass, stone, or stainless steel designed frames for high end applications. Configurable buttons allow for flexibility in individual room control applications. The universal WRF08 is available in LON, Modbus and BACnet communications thus allowing programmable control.



WRF08 12T pure white,  
without frame



WRF08 12T pure white,  
frame fluted glass



WRF08 8T aluminium,  
frame Midnight

### TECHNICAL DATA

Measuring values	temperature
Network technology	BACnet MS/TP LON FT (free topology) RS485 Modbus
Power supply	BACnet   LON: 15..24 V = ( $\pm 10\%$ ) oder 24 V ~ ( $\pm 10\%$ ) RS485 Modbus: 15..24 V = ( $\pm 10\%$ )
Power consumption	typ. 1,5 W (24 V =)   2,9 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	$\pm 0,5$ K (typ. at 21 °C)
Design	glass grooved. brushed stainless steel Midnight (Corian) Dusk (Corian)
Control functions	various switching functions, e.g.: light ON/OFF/DIM blinds UP/DOWN/SET fan stages setpoint
No. of buttons	2, 4, 8, 12
Labelling	Button labelling: individually with printable inlay transparency
Display	LCD 39x51 mm, monochrome
Enclosure	ABS, pure white, aluminium, anthracite
Protection	IP30 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box ( $\varnothing=55$ mm)
Delivery contents	software for configuration (freeware via download)



Item description: product | no. of buttons | BUS | enclosure colour

## WRF08



### Room operating unit temperature – BACnet MS/TP

RU2

Item description	Item no.	€
WRF08 2T BACnet MS/TP pure white	500029	357,70
WRF08 4T BACnet MS/TP pure white	485289	365,00
WRF08 8T BACnet MS/TP pure white	437837	373,40
WRF08 12T BACnet MS/TP pure white	476539	392,70



### Room operating unit temperature – LON

RU2

Item description	Item no.	€
WRF08 2T LON pure white	270472	379,80
WRF08 4T LON pure white	265485	387,10
WRF08 8T LON pure white	266291	395,40
WRF08 12T LON pure white	266512	414,20



### Room operating unit temperature – RS485 Modbus

RU2

Item description	Item no.	€
WRF08 2T RS485 Modbus pure white	350457	338,20
WRF08 4T RS485 Modbus pure white	340465	345,50
WRF08 8T RS485 Modbus pure white	340106	353,80
WRF08 12T RS485 Modbus pure white	330947	372,60

### Options

Item description	€
Software for configuration (freeware)	0,00
Enclosure colour anthracite   aluminium	0,00
Design frame – fluted glass	34,30
Design frame – brushed stainless steel	28,90
Design frame – Midnight	28,90
Design frame – dusk	28,90

## Design examples



WRF08 8T anthracite,  
frame Dusk



WRF08 12T anthracite,  
brushed stainless steel



WRF08 4T aluminium,  
without frame



WRF06 LCD ltype1 pure white,  
frame Gira E2 pure white



WRF06 LCD ltype1 anthracite,  
frame Peha Aura Glas



WRF06 LCD LON ltype2 pure white,  
frame Gira Esprit Alu

## WRF06 LCD

Room and space temperature measurement with set point adjustment, fan speed, LCD display and manual override. Integrated heating/cooling controller and digital inputs for window contacts, dew point detection and analogue, relay or triac outputs for control valves. Available as a standalone or LON or Modbus communications. Fits into switch frames 55x55 mm.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	VV: 2x 0..10 V
Network technology	LON FT (free topology) RS485 Modbus
Power supply	15..24 V (=±10%) or 24 V ~ (=±10%)
Power consumption	VV   RS485 Modbus: typ. 0,8 W (24 V ~)   2,5 VA (24 V ~) LON: typ. 1,3 W (24 V ~)   1,5 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Antique
Switch range Peha	Aura, Aura glass
Functions	VV: 2 inputs, 2 outputs 0..10 V temperature/set point AO2V: 2 inputs, 2 outputs 0..10 V DI4: 4 inputs (digital) DO2R: 2 inputs, 2 outputs relay DO2T: 2 inputs, 2 outputs Triac OVR: 2 inputs, 2 outputs (1x 0..10 V, 1 relay) OVT: 2 inputs, 2 outputs (1x 0..10 V, 1 Triac)
No. of buttons	4
Display	LCD 34x21 mm, monochrome
Enclosure	PC, pure white, aluminium, anthracite
Protection	IP30 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> , pluggable
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm) DO2T, DO2R, OVR, OVT with IO extension need 2 flush-mounting boxes (Ø=55 mm) and double frame (1 deep flush-mounting box Ø=55 mm may be used)
Delivery contents	software for configuration (freeware via download)
Notes	please specify frame design when ordering please indicate labelling type in order VV: only available with labelling type 1 and 3 BUS: only available with labelling type 1 and 2



## WRF06 LCD

### Labelling types

labelling type 1 (Itype1)  
standard



labelling type 2 (Itype2)  
only types with BUS (refer to options)



labelling type 3 (Itype3)  
only type VV (refer to options)



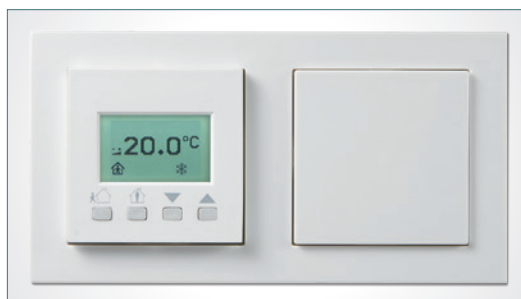
Item description: product | VV | labelling type | switch range | colour

Room operating unit temperature – active 0..10 V							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	€	
WRF06 LCD VV Itype1 Gira E2 pure white	2	2	-	-	362979	208,90	

Item description: product | inputs/outputs | BUS | labelling type | switch range | colour



Room operating unit temperature – LON							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	Regulator	€
WRF06 LCD A02V LON Itype1 Gira E2 pure white	2	2	-	-	363495	✓	271,80
WRF06 LCD DI4 LON Itype1 Gira E2 pure white	4	-	-	-	363556	✓	271,80
WRF06 LCD D02R LON Itype1 Gira E2 pure white	2	-	2	-	364560	✓	301,50
WRF06 LCD D02T LON Itype1 Gira E2 pure white	2	-	-	2	406222	✓	301,50
WRF06 LCD OVR LON Itype1 Gira E2 pure white	2	1	1	-	364355	✓	301,50
WRF06 LCD OVT LON Itype1 Gira E2 pure white	2	1	-	1	627665	✓	301,50



WRF06 LCD with IO-Extension (DO2T, DO2R, OVR, OVT)

Item description: product | inputs/outputs | BUS | labelling type | switch range | colour

## WRF06 LCD



Room operating unit temperature – RS485 Modbus							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	Regulator	€
WRF06 LCD AO2V RS485 Modbus ltype1 Gira E2 pure white	2	2	-	-	382144	✓	244,60
WRF06 LCD DI4 RS485 Modbus ltype1 Gira E2 pure white	4	-	-	-	439527	✓	244,60
WRF06 LCD DO2R RS485 Modbus ltype1 Gira E2 pure white	2	-	2	-	406192	✓	274,30
WRF06 LCD DO2T RS485 Modbus ltype1 Gira E2 pure white	2	-	-	2	449441	✓	274,30
WRF06 LCD OVR RS485 Modbus ltype1 Gira E2 pure white	2	1	1	-	464352	✓	274,30
WRF06 LCD OVT RS485 Modbus ltype1 Gira E2 pure white	2	1	-	1	424806	✓	274,30

Options	
Item description	€
Switch ranges Busch-Jaeger Busch-balance® SI	0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00
Switch range Gira Esprit	22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)	35,10
Other switch ranges	12,50
Labelling type 2 (ltype2) - only BUS models	0,00
Labelling type 3 (ltype3) - only type VV	0,00

Order example for different items:

**WRF06 LCD | AO2V | LON | ltype2 | Peha Aura Glas**

**WRF06 LCD** = product  
**AO2V** = type and number of inputs/outputs  
**LON** = BUS  
**ltype2** = labelling type 2  
**Peha Aura Glas** = switch range glass

Accessories			AS1
Item description	Item no.	On stock	€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737	⊕	42,00





## WRF07

Room and space temperature measurement with set point adjustment, fan speed and manual override.



WRF07 P I type1,  
Gira E2 pure white



WRF07 P I type1,  
Busch-Jaeger alpha nea®



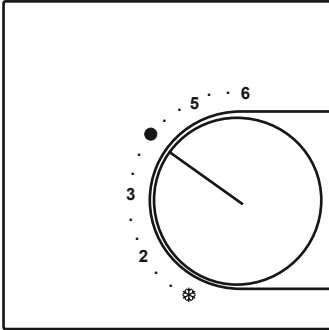
TECHNICAL DATA	
Measuring values	temperature
Output voltage	TRV: 1x 0..10 V
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	TRV: 12mA   24 V = BACnet: typ. 0,9 W (24 V =)   1 VA (24 V ~) LON: typ. 0,7 W (24 V =)   2,5 VA (24 V ~) RS485 Modbus: typ. 0,9 W (24 V =)   1 VA (24 V ~)
Measuring range temp.	0..+50 °C, passive: -35..+70 °C
Accuracy temperature	±0,5 K (typ. at 21 °C) TRV: ±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Inputs	TRV: 1 output 0..10 V AO2V: 2 inputs, 2 outputs 0..10 V DI4: 4x for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.1, K.5 aluminum   stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIodue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
Set point (P)	potentiometer, 3-wire connection default value 10 kΩ (1 kΩ   5 kΩ optional, for other values please request) active output 0..10 V (optional)
Rotary switch (S)	mini rotary switch for fan stage adjustment with up to 5 stages available (please request) switching capacity max. 5 W
Rocker switch (S)	for fan speed adjustment
Button (T)	for presence detection switching capacity max. 600 mW
LED (D)	for status feedback, green (standard) several LEDs possible (e.g. green, yellow, red)
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm) DO2T, DO2R, OVR, OVT with IO extension need 2 flush-mounting boxes (Ø=55 mm) and double frame (1 deep flush-mounting box Ø=55 mm may be used)
Delivery contents	software for configuration (freeware via download)
Notes	models DO2T, DO2R, OVR, OVT with IO extension available, other sensors   operating elements   switch ranges on request

## WRF07

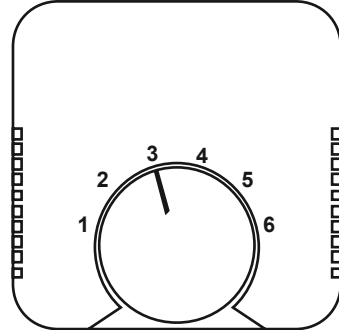
Types with standard labelling (only with standard switch ranges)

Labelling type 1 (manufacturer standard labelling, depending on switch range)

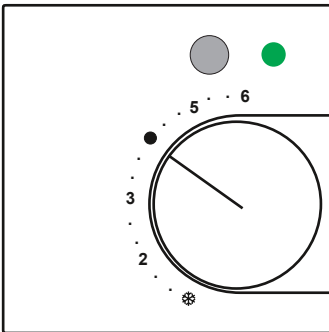
WRF07 P I type1 Gira E2 pure white



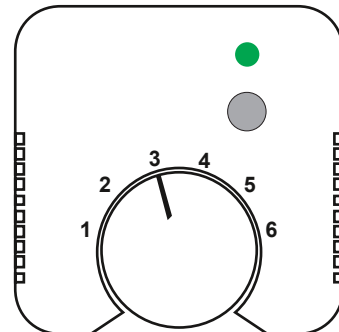
WRF07 P I type1 Busch-Jaeger



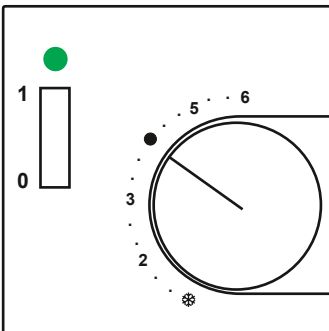
WRF07 PTD I type1 Gira E2 pure white



WRF07 PTD I type1 Busch-Jaeger



WRF07 PSD I type1 Gira E2 pure white

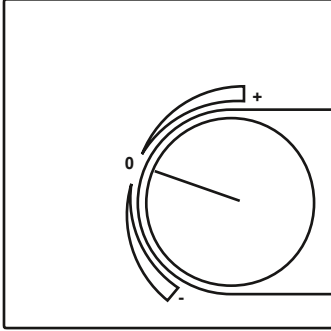


other switch ranges similar

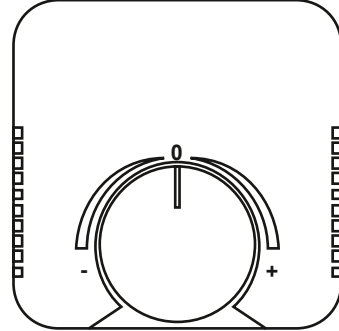
**WRF07**

**Labelling type 2** (refer to options)

WRF07 P I type2 Gira E2 pure white

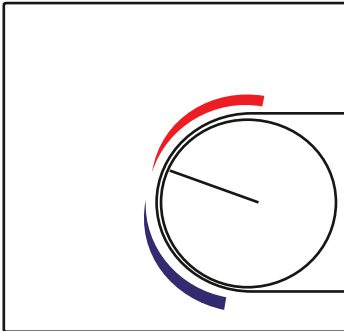


WRF07 P I type2 Busch-Jaeger

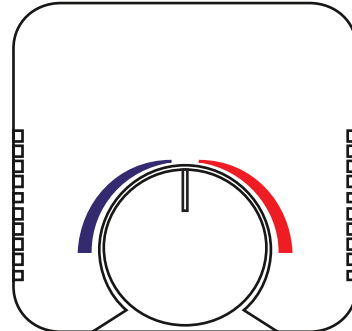


**Labelling type 6 - colour red/blue** (refer to options)

WRF07 P I type6 Gira E2 pure white



WRF07 P I type6 Busch-Jaeger



labelling type 2 | type 6 also available with PSD | PTD version

P = potentiometer, PTD = potentiometer, button, LED, PSD = potentiometer, rocker switch, LED

## » Room Operating Units Flush Mount

Item descr.: product | operating elements | sensor | labelling type | switch range | colour | potentiometer | LED

### WRF07

Room operating unit temperature – without sensor			RU2
Item description	Item no.		€
WRF07 P without sensor ltype1 Gira E2 pure white, 10 kOhm	202664		78,60
WRF07 PTD without sensor ltype1 Gira E2 pure white, 10 kOhm, LED green	542883		108,60
WRF07 PSD without sensor ltype1 Gira E2 pure white, 10 kOhm, LED green	627917		111,90

Room operating unit temperature – PT100			RU2
Item description	Item no.		€
WRF07 P PT100 ltype1 Gira E2 pure white, 10 kOhm	628020		85,60
WRF07 PTD PT100 ltype1 Gira E2 pure white, 10 kOhm, LED green	553278		115,60
WRF07 PSD PT100 ltype1 Gira E2 pure white, 10 kOhm, LED green	627924		118,90

Room operating unit temperature – PT100 1/3 DIN			RU2
Item description	Item no.		€
WRF07 P PT100 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm	628037		89,30
WRF07 PTD PT100 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm, LED green	628068		119,30
WRF07 PSD PT100 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm, LED green	627931		122,70

Room operating unit temperature – PT1000			RU2
Item description	Item no.		€
WRF07 P PT1000 ltype1 Gira E2 pure white, 10 kOhm	399012		87,80
WRF07 PTD PT1000 ltype1 Gira E2 pure white, 10 kOhm, LED green	291767		117,80
WRF07 PSD PT1000 ltype1 Gira E2 pure white, 10 kOhm, LED green	627948		121,10

Room operating unit temperature – PT1000 1/3 DIN			RU2
Item description	Item no.		€
WRF07 P PT1000 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm	628044		90,80
WRF07 PTD PT1000 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm, LED green	628075		120,80
WRF07 PSD PT1000 1/3 DIN ltype1 Gira E2 pure white, 10 kOhm, LED green	627955		124,10

Room operating unit temperature – Ni1000			RU2
Item description	Item no.		€
WRF07 P Ni1000 ltype1 Gira E2 pure white, 10 kOhm	400220		87,50
WRF07 PTD Ni1000 ltype1 Gira E2 pure white, 10 kOhm, LED green	529266		117,50
WRF07 PSD Ni1000 ltype1 Gira E2 pure white, 10 kOhm, LED green	627962		120,80

Room operating unit temperature – Ni1000TK5000			RU2
Item description	Item no.		€
WRF07 P Ni1000TK5000 ltype1 Gira E2 pure white, 10 kOhm	193634		91,00
WRF07 PTD Ni1000TK5000 ltype1 Gira E2 pure white, 10 kOhm, LED green	628082		121,00
WRF07 PSD Ni1000TK5000 ltype1 Gira E2 pure white, 10 kOhm, LED green	627979		124,30

Room operating unit temperature – NTC10k			RU2
Item description	Item no.		€
WRF07 P NTC10k ltype1 Gira E2 pure white, 10 kOhm	400237		84,30
WRF07 PTD NTC10k ltype1 Gira E2 pure white, 10 kOhm, LED green	628099		114,30
WRF07 PSD NTC10k ltype1 Gira E2 pure white, 10 kOhm, LED green	627986		117,60

Item descr.: product | operating elements | sensor | labelling type | switch range | colour | potentiometer | LED

## WRF07

Room operating unit temperature – NTC10k Precon			RU2
Item description	Item no.	€	
WRF07 P NTC10k Precon ltype1 Gira E2 pure white, 10 kOhm	628051	84,30	
WRF07 PTD NTC10k Precon ltype1 Gira E2 pure white, 10 kOhm, LED green	628105	114,30	
WRF07 PSD NTC10k Precon ltype1 Gira E2 pure white, 10 kOhm, LED green	627993	117,60	

Room operating unit temperature – NTC20k			RU2
Item description	Item no.	€	
WRF07 P NTC20k ltype1 Gira E2 pure white, 10 kOhm	191234	84,30	
WRF07 PTD NTC20k ltype1 Gira E2 pure white, 10 kOhm, LED green	611343	114,30	
WRF07 PSD NTC20k ltype1 Gira E2 pure white, 10 kOhm, LED green	628006	117,60	

Room operating unit temperature – NTC1,8k			RU2
Item description	Item no.	€	
WRF07 P NTC1,8k ltype1 Gira E2 pure white, 10 kOhm	668484	84,30	
WRF07 PTD NTC1,8k ltype1 Gira E2 pure white, 10 kOhm, LED green	668507	114,30	
WRF07 PSD NTC1,8k ltype1 Gira E2 pure white, 10 kOhm, LED green	668521	117,60	

Room operating unit temperature – LM235Z			RU2
Item description	Item no.	€	
WRF07 P LM235Z ltype1 Gira E2 pure white, 10 kOhm	199599	86,10	
WRF07 PTD LM235Z ltype1 Gira E2 pure white, 10 kOhm, LED green	164863	116,00	
WRF07 PSD LM235Z ltype1 Gira E2 pure white, 10 kOhm, LED green	628013	119,40	

P = potentiometer, PTD = potentiometer, button, LED, PSD = potentiometer, rocker switch, LED

Options		
Item description	€	
Passive potentiometer 1 kΩ (poti_1kOhm) or 5 kΩ (Poti_5kOhm), for other values please request	0,00	
Active potentiometer 0..10 V (poti_active)	22,40	
Rocker switch S with 3 fan stages (FS3: 1-0-2)	0,00	
Switch ranges Busch-Jaeger Busch-balance® SI   Reflex SI	0,00	
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00	
Switch range Gira Esprit	22,30	
Switch ranges stainless steel   glass   aluminium (different manufacturers)	35,10	
Other switch ranges	12,50	
Labelling type 2 (ltype2)	4,50	
Labelling type 6 colour red+blue (ltype6)	6,00	
Additional button	22,00	
Additional diode (LED)	18,00	
Add to price of NTC10k for sensor NTC10k Carel	0,00	
Add to price of PT100 for sensor FeT	19,25	

Order example for different items:

**WRF07 | PSD | FeT | ltype2 | Gira Esprit | Poti\_active**

**WRF07** = product  
**PSD** = potentiometer, rocker switch, LED  
**FeT** = sensor  
**ltype2** = labelling type 2  
**Gira Esprit** = switch range Gira Esprit  
**Poti\_active** = active potentiometer 0..10 V

## WRF07

Item description: product | operating elements | TRV3 | labelling type | switch range | colour | LED

Room operating unit temperature – TRV3 0..10 V 0..+50 °C					RU2
Item description	Inputs	0..10 V	Item no.		€
WRF07 P TRV3 Itype1 Gira E2 pure white	-	1	243902		171,20
WRF07 PTD TRV3 Itype1 Gira E2 pure white, LED green	-	1	369602		201,10
WRF07 PSD TRV3 Itype1 Gira E2 pure white, LED green	-	1	332132		204,50

Item description: product | operating elements | inputs/outputs | BUS | labelling type | switch range | colour | LED



Room operating unit temperature – AO2V BACnet					RU2
Item description	Inputs	0..10 V	Item no.		€
WRF07 P AO2V BACnet Itype1 Gira E2 pure white	2	2	628150		214,90
WRF07 PTD AO2V BACnet Itype1 Gira E2 pure white, LED green	2	2	628167		225,30



Room operating unit temperature – LON					RU2
Item description	Inputs	0..10 V	Item no.	Regulator	€
WRF07 P DI4 LON Itype1 Gira E2 pure white	4	-	615600	✓	237,40
WRF07 PTD DI4 LON Itype1 Gira E2 pure white, LED green	4	-	595230	✓	248,90
WRF07 P AO2V LON Itype1 Gira E2 pure white	2	2	583374	✓	237,40
WRF07 PTD AO2V LON Itype1 Gira E2 pure white, LED green	2	2	628174	✓	248,90



Room operating unit temperature – RS485 Modbus					RU2
Item description	Inputs	0..10 V	Item no.	Regulator	€
WRF07 P DI4 RS485 Modbus Itype1 Gira E2 pure white	4	-	613910	✓	214,90
WRF07 PTD DI4 RS485 Modbus Itype1 Gira E2 pure white, LED green	4	-	628181	✓	225,30
WRF07 P AO2V RS485 Modbus Itype1 Gira E2 pure white	2	2	496094	✓	214,90
WRF07 PTD AO2V RS485 Modbus Itype1 Gira E2 pure white, LED green	2	2	497800	✓	225,30

P = potentiometer, PTD = potentiometer, button, LED, PSD = potentiometer, rocker switch, LED

Options	
Item description	€
Rocker switch S with 3 fan stages (FS3: 1-0-2)	0,00
Switch ranges Busch-Jaeger Busch-balance® SI   Reflex SI	0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3	0,00
Switch range Gira Esprit	22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)	35,10
Other switch ranges	12,50
Labelling type 2 (Itype2)	4,50
Labelling type 6 colour red+blue (Itype6)	6,00
Additional button	22,00
Additional diode (LED)	18,00

## WRF07

### Accessories

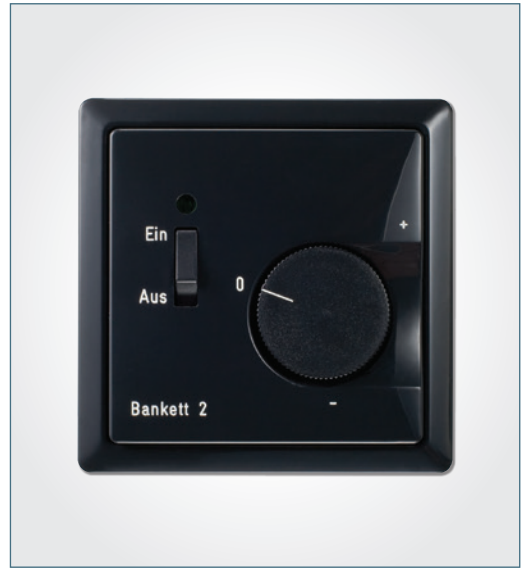
AS1

Item description	Item no.	On stock	€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737	⊖	42,00

### Design examples



WRF07 PTD Gira Standard55  
special labelling



WRF07 PSD Merten Artec  
special model/special labelling



WRF07 PT Jung LS stainless steel ltype6

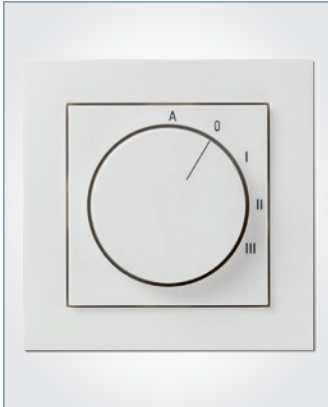


WRF07 P2D with mini rotary-switch



## WRF06 x

Room operating unit for room/space temperature measurement with fan stage adjustment and manual override. Designed for control and monitoring systems.



WRF06 S, Gira E2 pure white  
standard labelling



WRF06 TD Gira E2 pure white



WRF06 4T4D Jung AS 500 alpine white  
special model/special labelling

### TECHNICAL DATA

Measuring values	temperature
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 0,9 W (24 V =)   1 VA (24 V ~)
Measuring range temp.	passive: $-35..+70\text{ }^{\circ}\text{C}$
Accuracy temperature	passive: typ. $\pm 0,3\text{ K}$ (typ. at $21\text{ }^{\circ}\text{C}$ ), depending on used sensor
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.1, K.5 aluminum   stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto, 0, I, II, III) 2-stages (0, I) 3-stages (0, I, II) 4-stages (0, I, II, III) double frame has to be used in combination with temperature sensor
Button (T)	for presence detection switching capacity max. 600 mW
LED (D)	for status feedback, green (standard) several LEDs possible (e.g. green, yellow, red)
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. $1,5\text{ mm}^2$ , pluggable
Ambient condition	$-35..+70\text{ }^{\circ}\text{C}$ , max. 85% rH non-condensing
Mounting	flush mounted in standard EU box ( $\varnothing=55\text{ mm}$ )
Notes	for other sensors please request for other operating elements please request



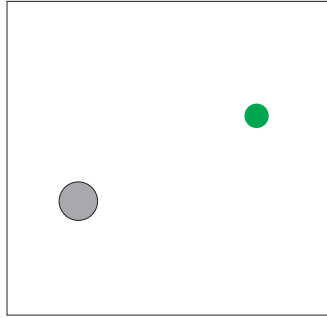
**WRF06 x**

**Types with standard labelling**

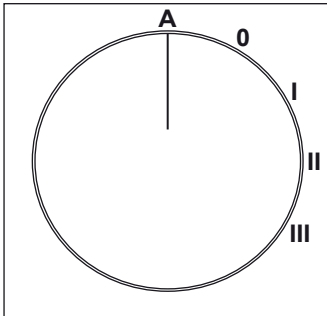
*(only with standard switch ranges)*

special labelling refer to p. 346

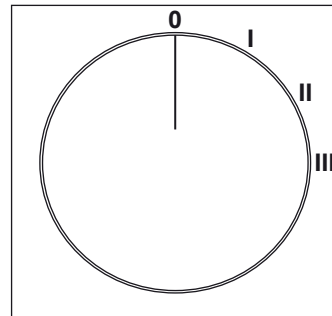
**WRF06 TD without labelling**  
*(standard)*



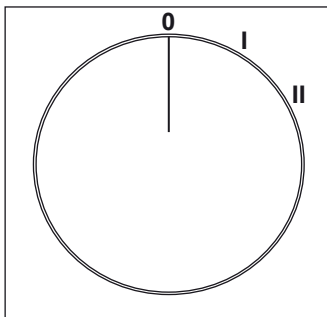
**WRF06 S with 5 fan stages**  
*(FS5, standard)*



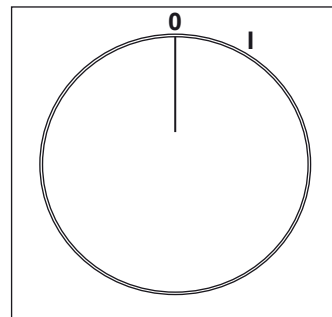
**WRF06 S with 4 fan stages**  
*(FS4, refer to options)*



**WRF06 S with 3 fan stages**  
*(FS3, refer to options)*



**WRF06 S with 2 fan stages**  
*(FS2, refer to options)*



## WRF06 x

Item description: product | operating elements | sensor | switch range | colour | fan stages | LED

Room operating unit temperature – without sensor			RU2
Item description	Item no.		€
WRF06 S without sensor Gira E2 pure white, FS5	629201		82,80
WRF06 TD without sensor Gira E2 pure white, LED green	285964		63,90

Room operating unit temperature – passive			RU2
Item description	Item no.		€
WRF06 TD PT100 Gira E2 pure white, LED green	564441		70,90
WRF06 TD PT100 1/3 DIN Gira E2 pure white, LED green	629409		74,60
WRF06 TD PT1000 Gira E2 pure white, LED green	629423		73,10
WRF06 TD PT1000 1/3 DIN Gira E2 pure white, LED green	629447		76,10
WRF06 TD Ni1000 Gira E2 pure white, LED green	195379		72,70
WRF06 TD Ni1000TK5000 Gira E2 pure white, LED green	629461		76,30
WRF06 TD NTC10k Gira E2 pure white, LED green	629324		69,60
WRF06 TD NTC10k Precon Gira E2 pure white, LED green	629348		69,60
WRF06 TD NTC20k Gira E2 pure white, LED green	629362		69,60
WRF06 TD NTC1,8k Gira E2 pure white, LED green	668545		69,60
WRF06 TD LM235Z Gira E2 pure white, LED green	563703		71,30

S rotary switch, TD button, LED

Options		
Item description		€
Switch ranges Busch-Jaeger Busch-balance® SI   Reflex SI		0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3		0,00
Switch range Gira Esprit		22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)		35,10
Other switch ranges		12,50
Additional button		22,00
Additional diode (LED)		18,00
Rotary switch S with 4 fan stages (FS4)		0,00
Rotary switch S with 3 fan stages (FS3)		0,00
Rotary switch S with 2 fan stages (FS2)		0,00
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Order example for different items:

### WRF06 | 2T2D | FeT | Gira Esprit

**WRF06** = product  
**2T2D** = 2 buttons, 2 LED  
**FeT** = sensor  
**Gira Esprit** = switch range Gira Esprit

Accessories				AS1
Item description	Item no.	On stock		€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	🌀		42,00



WRF04 PSTD F55



WRF04 P,  
standard labelling colour



## WRF04 x

Room and space temperature measurement with optional set point adjustment, fan speed and manual override.

### TECHNICAL DATA

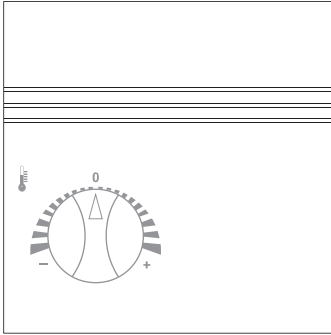
Measuring values	temperature
Output voltage	TRV: 1x 0..10 V, min. load 5 kΩ
Output switch contact	Relay: switch contact 24 V   3 mA, floating Triac: 24 V ~   1 A, floating
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	TRV: typ. 0,42 W (24 V =)   0,84 VA (24 V ~) BACnet: typ. 0,4 W (24 V =)   0,6 VA (24 V ~) LON: typ. 0,6 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~)
Measuring range temp.	0..+50 °C passive: -35..+70 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Inputs	2x entry for floating contacts (with LON/RS485 Modbus)
Set point (P)	potentiometer, 3-wire connection default value 10 kΩ (1 kΩ   5 kΩ optional, for other values please request) active output 0..10 V (optional)
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto,0,I,II,III) 2-stages (0,I) 3-stages (0,I,II) 4-stages (0,I,II,III) switching capacity max. 5 W
Button (T)	for presence detection switching capacity max. 600 mW
LED (D)	for status feedback, green (standard) several LEDs possible (e.g. green, yellow, red)
Functions	TRV: 1 output 0..10 V AO2V: 2 inputs, 2 outputs 0..10 V DO2R: 2 inputs, 2 outputs relay DO2T: 2 inputs, 2 outputs Triac OVR: 2 inputs, 2 outputs (1x 0..10 V, 1 relay) OVT: 2 inputs, 2 outputs (1x 0..10 V, 1 Triac)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom, rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm) to be mounted flat onto the surface using adhesive foil or screws DO2T, DO2R, OVR, OVT with IO extension need an additional flush-mounting box (Ø=55 mm)
Notes	special labelling available on request special painting available on request other sensors   operating elements on request RS485 Modbus: with built-in PI controller

**WRF04 x**

**Types with standard labelling**

special labelling refer to p. 346

**WRF04 P**



**Legend:**

P = potentiometer

S = rotary switch

T = button

D = LED

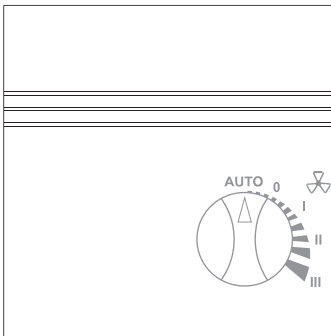
FSx = number of fan stages

for sensor types refer to items,

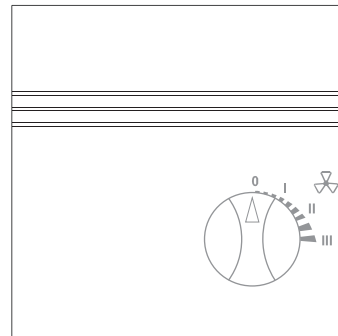
WRF04 with LCD refer to p. 156,

WRF04 without operating elements refer to p. 172

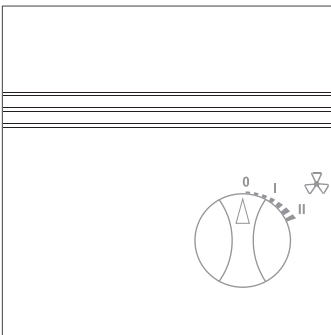
**WRF04 S with 5 fan stages**  
*(FS5, standard)*



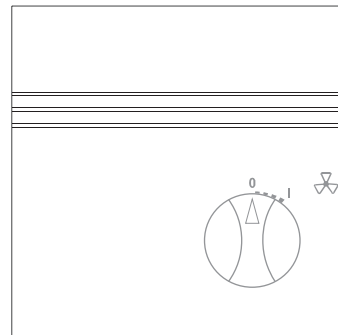
**WRF04 S with 4 fan stages**  
*(FS4, refer to options)*



**WRF04 S with 3 fan stages**  
*(FS3, refer to options)*

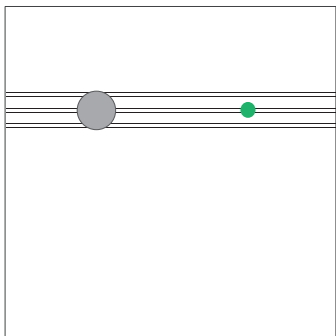


**WRF04 S with 2 fan stages**  
*(FS2, refer to options)*



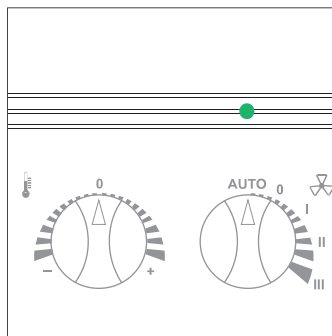
**WRF04 x**

**WRF04 TD**

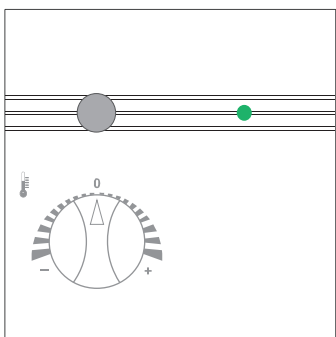


**WRF04 PSD with 5 fan stages**

*FS5, also available with FS4, FS3 and FS2*

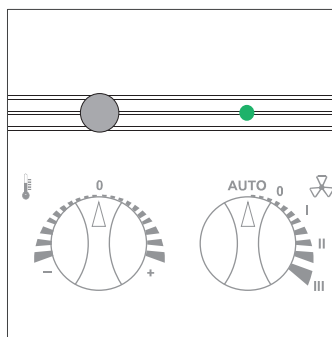


**WRF04 PTD**



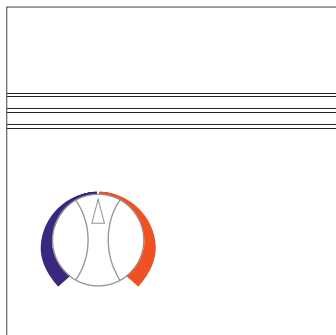
**WRF04 PSTD with 5 fan stages**

*FS5, also available with FS4, FS3 and FS2*



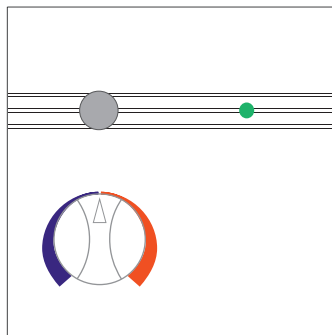
**WRF04 P standard labelling colour**

*(refer to options)*



**WRF04 PTD standard labelling colour**

*(refer to options)*



**WRF04 x**

Item description: product | operating elements | sensor | labelling type | potentiometer | LED

<b>Room operating unit temperature – without sensor</b>			<b>RU3</b>
Item description	Item no.	€	
WRF04 P without sensor, 10 kOhm	197137	36,10	
WRF04 S without sensor, FS5	206204	51,80	
WRF04 TD without sensor, LED green	206228	39,60	
WRF04 PSD without sensor, 10 kOhm, FS5, LED green	628358	79,00	
WRF04 PTD without sensor, 10 kOhm, LED green	315029	60,10	
WRF04 PSTD without sensor, 10 kOhm, FS5, LED green	628372	95,00	

<b>Room operating unit temperature – PT100</b>			<b>RU3</b>
Item description	Item no.	€	
WRF04 P PT100, 10 kOhm	214100	43,10	
WRF04 S PT100, FS5	592451	58,80	
WRF04 TD PT100, LED green	205665	46,60	
WRF04 PSD PT100, 10 kOhm, FS5, LED green	257671	86,00	
WRF04 PTD PT100, 10 kOhm, LED green	409728	67,10	
WRF04 PSTD PT100, 10 kOhm, FS5, LED green	491280	102,00	

<b>Room operating unit temperature – PT100 1/3 DIN</b>			<b>RU3</b>
Item description	Item no.	€	
WRF04 P PT100 1/3 DIN, 10 kOhm	628402	46,80	
WRF04 S PT100 1/3 DIN, FS5	490115	62,60	
WRF04 TD PT100 1/3 DIN, LED green	372565	50,40	
WRF04 PSD PT100 1/3 DIN, 10 kOhm, FS5, LED green	628419	89,80	
WRF04 PTD PT100 1/3 DIN, 10 kOhm, LED green	628426	70,80	
WRF04 PSTD PT100 1/3 DIN, 10 kOhm, FS5, LED green	628433	105,70	

<b>Room operating unit temperature – PT1000</b>			<b>RU3</b>
Item description	Item no.	€	
WRF04 P PT1000, 10 kOhm	628457	45,30	
WRF04 S PT1000, FS5	469081	61,00	
WRF04 TD PT1000, LED green	199773	48,80	
WRF04 PSD PT1000, 10 kOhm, FS5, LED green	628464	88,20	
WRF04 PTD PT1000, 10 kOhm, LED green	409735	69,30	
WRF04 PSTD PT1000, 10 kOhm, FS5, LED green	628471	104,20	

<b>Room operating unit temperature – PT1000 1/3 DIN</b>			<b>RU3</b>
Item description	Item no.	€	
WRF04 P PT1000 1/3 DIN, 10 kOhm	287777	48,30	
WRF04 S PT1000 1/3 DIN, FS5	628501	64,00	
WRF04 TD PT1000 1/3 DIN, LED green	319744	51,80	
WRF04 PSD PT1000 1/3 DIN, 10 kOhm, FS5, LED green	628518	91,20	
WRF04 PTD PT1000 1/3 DIN, 10 kOhm, LED green	628525	72,30	
WRF04 PSTD PT1000 1/3 DIN, 10 kOhm, FS5, LED green	628549	107,20	

## WRF04 x

Item description: product | operating elements | sensor | labelling type | potentiometer | LED

Room operating unit temperature – Ni1000			RU3
Item description	Item no.	€	
WRF04 P Ni1000, 10 kOhm	246361	45,00	
WRF04 S Ni1000, FS5	266758	60,70	
WRF04 TD Ni1000, LED green	197595	48,50	
WRF04 PSD Ni1000, 10 kOhm, FS5, LED green	628587	87,90	
WRF04 PTD Ni1000, 10 kOhm, LED green	228923	69,00	
WRF04 PSTD Ni1000, 10 kOhm, FS5, LED green	486156	103,90	

Room operating unit temperature – Ni1000TK5000			RU3
Item description	Item no.	€	
WRF04 P Ni1000TK5000, 10 kOhm	218948	48,50	
WRF04 S Ni1000TK5000, FS5	542982	64,20	
WRF04 TD Ni1000TK5000, LED green	257480	52,00	
WRF04 PSD Ni1000TK5000, 10 kOhm, FS5, LED green	628631	91,40	
WRF04 PTD Ni1000TK5000, 10 kOhm, LED green	409742	72,50	
WRF04 PSTD Ni1000TK5000, 10 kOhm, FS5, LED green	628648	107,40	

Room operating unit temperature – NTC10k			RU3
Item description	Item no.	€	
WRF04 P NTC10k, 10 kOhm	208789	41,80	
WRF04 S NTC10k, FS5	348829	57,50	
WRF04 TD NTC10k, LED green	216692	46,10	
WRF04 PSD NTC10k, 10 kOhm, FS5, LED green	471114	84,70	
WRF04 PTD NTC10k, 10 kOhm, LED green	263573	65,80	
WRF04 PSTD NTC10k, 10 kOhm, FS5, LED green	491297	100,70	

Room operating unit temperature – NTC10k Precon			RU3
Item description	Item no.	€	
WRF04 P NTC10k Precon, 10 kOhm	218146	41,80	
WRF04 S NTC10k Precon, FS5	546713	57,50	
WRF04 TD NTC10k Precon, LED green	314176	46,10	
WRF04 PSD NTC10k Precon, 10 kOhm, FS5, LED green	546720	84,70	
WRF04 PTD NTC10k Precon, 10 kOhm, LED green	374415	65,80	
WRF04 PSTD NTC10k Precon, 10 kOhm, FS5, LED green	546737	100,70	

Room operating unit temperature – NTC20k			RU3
Item description	Item no.	€	
WRF04 P NTC20k, 10 kOhm	209762	41,80	
WRF04 S NTC20k, FS5	628655	57,50	
WRF04 TD NTC20k, LED green	267199	46,10	
WRF04 PSD NTC20k, 10 kOhm, FS5, LED green	486323	84,70	
WRF04 PTD NTC20k, 10 kOhm, LED green	409711	65,80	
WRF04 PSTD NTC20k, 10 kOhm, FS5, LED green	628662	100,70	

P = potentiometer, S = rotary switch, T = button, D = LED

**WRF04 x**

Item description: product | operating elements | sensor | labelling type | potentiometer | LED

Room operating unit temperature – NTC1,8k		RU3
Item description	Item no.	€
WRF04 P NTC1,8k, 10 kOhm	409667	41,80
WRF04 S NTC10k, FS5	546690	57,50
WRF04 TD NTC1,8k, LED green	282482	46,10
WRF04 PSD NTC1,8k, 10 kOhm, FS5, LED green	668569	84,70
WRF04 PTD NTC1,8k, 10 kOhm, LED green	259019	65,80
WRF04 PSTD NTC1,8k, 10 kOhm, FS5, LED green	486163	100,70

Room operating unit temperature – LM235Z		RU3
Item description	Item no.	€
WRF04 P LM235Z, 10 kOhm	223546	43,70
WRF04 S LM235Z, FS5	569897	59,30
WRF04 TD LM235Z, LED green	263238	48,00
WRF04 PSD LM235Z, 10 kOhm, FS5, LED green	571906	87,30
WRF04 PTD LM235Z, 10 kOhm, LED green	223096	68,40
WRF04 PSTD LM235Z, 10 kOhm, FS5, LED green	628679	103,90

Options		€
Item description		
Passive potentiometer 1 kΩ (poti_1kOhm) or 5 kΩ (Poti_5kOhm), for other values please request		0,00
Active potentiometer 0..10 V (poti_active)		22,40
Rotary switch S with 4 fan stages (FS4)		0,00
Rotary switch S with 3 fan stages (FS3)		0,00
Rotary switch S with 2 fan stages (FS2)		0,00
Default labelling P colour red+blue		6,00
Additional rotary switch		28,80
Additional button		22,00
Additional diode (LED)		18,00
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Order example for different items:

**WRF04 | PSTD | FeT | Poti\_active | FS4**

**WRF04** = product  
**PSTD** = potentiometer, rotary switch, button, LED  
**FeT** = sensor  
**FS4** = rotary switch (S) with 4 fan stages  
**Poti\_active** = active potentiometer 0..10 V



## WRF04 x

Item description: product | operating elements | TRV | labelling type | LED

Room operating unit temperature – active 0..10 V						RU2
Item description	Inputs	0..10 V	Relay	Item no.		€
WRF04 P TRV3, poti_active	-	1	-	208864		128,80
WRF04 PSD TRV3, poti_active, FS5, LED green	-	1	-	637558		172,40
WRF04 PTD TRV3, poti_active, LED green	-	1	-	192897		153,50
WRF04 PSTD TRV3, poti_active, FS5, LED green	-	1	-	637565		210,80

Item description: product | operating elements | inputs/outputs | BUS | labelling type | LED



Room operating unit temperature – AO2V BACnet						RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€
WRF04 P AO2V BACnet	2	2	-	548885	✓	154,20
WRF04 PSD AO2V BACnet, FS5, LED green	2	2	-	548908	✓	179,40
WRF04 PTD AO2V BACnet, LED green	2	2	-	548892	✓	161,90
WRF04 PSTD AO2V BACnet, FS5, LED green	2	2	-	547666	✓	195,40



Room operating unit temperature – LON			RU2
Item description	Item no.		€
WRF04 P LON	330626		177,80
WRF04 PSD LON, FS5, LED green	389907		203,30
WRF04 PTD LON, LED green	312967		185,90
WRF04 PSTD LON, FS5, LED green	297769		211,40



Room operating unit temperature – AO2V RS485 Modbus						RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€
WRF04 P AO2V RS485 Modbus	2	2	-	419956	✓	154,20
WRF04 PSD AO2V RS485 Modbus, FS5, LED green	2	2	-	419949	✓	179,40
WRF04 PTD AO2V RS485 Modbus, LED green	2	2	-	415613	✓	161,90
WRF04 PSTD AO2V RS485 Modbus, FS5, LED green	2	2	-	480505	✓	195,40

Room operating unit temperature – DO2R RS485 Modbus						RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€
WRF04 P DO2R RS485 Modbus	2	-	2	420266	✓	195,80
WRF04 PSD DO2R RS485 Modbus, FS5, LED green	2	-	2	420280	✓	221,00
WRF04 PTD DO2R RS485 Modbus, LED green	2	-	2	420273	✓	203,50

P = potentiometer, S = rotary switch, T = button, D = LED

Item description: product | operating elements | inputs/outputs | BUS | labelling type | LED

## WRF04 x



Room operating unit temperature – DO2T RS485 Modbus							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	Regulator	€
WRF04 P DO2T RS485 Modbus	2	-	-	2	420617	✓	195,80
WRF04 PSD DO2T RS485 Modbus, FS5, LED green	2	-	-	2	420631	✓	221,00
WRF04 PTD DO2T RS485 Modbus, LED green	2	-	-	2	420624	✓	203,50

Room operating unit temperature – OVR RS485 Modbus							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	Regulator	€
WRF04 P OVR RS485 Modbus	2	1	1	-	420679	✓	195,80
WRF04 PSD OVR RS485 Modbus, FS5, LED green	2	1	1	-	420693	✓	221,00
WRF04 PTD OVR RS485 Modbus, LED green	2	1	1	-	420686	✓	203,50

Room operating unit temperature – OVT RS485 Modbus							RU2
Item description	Inputs	0..10 V	Relay	Triac	Item no.	Regulator	€
WRF04 P OVT RS485 Modbus	2	1	-	1	420747	✓	195,80
WRF04 PSD OVT RS485 Modbus, FS5, LED green	2	1	-	1	420761	✓	221,00
WRF04 PTD OVT RS485 Modbus, LED green	2	1	-	1	420754	✓	203,50

Options		€
Item description		
Rotary switch S with 4 fan stages (FS4)		0,00
Rotary switch S with 3 fan stages (FS3)		0,00
Rotary switch S with 2 fan stages (FS2)		0,00
Default labelling P colour red+blue		6,00
Additional rotary switch		28,80
Additional button		22,00
Additional diode (LED)		18,00

Order example for different items:

### WRF04 | PST3D | TRV3 | special labelling

**WRF04** = product  
**PST3D** = potentiometer, rotary switch, button, 3x LED  
**TRV3** = 1x 0..10 V output  
**special labelling** = with special labelling

Accessories				AS1
Item description	Item no.	On stock	€	
Rawplugs and screws (2 pcs. each)	102209	☺	0,80	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	☺	42,00	
Frame for surface mounting WRF04	111584	☺	12,40	

## WRF04 x

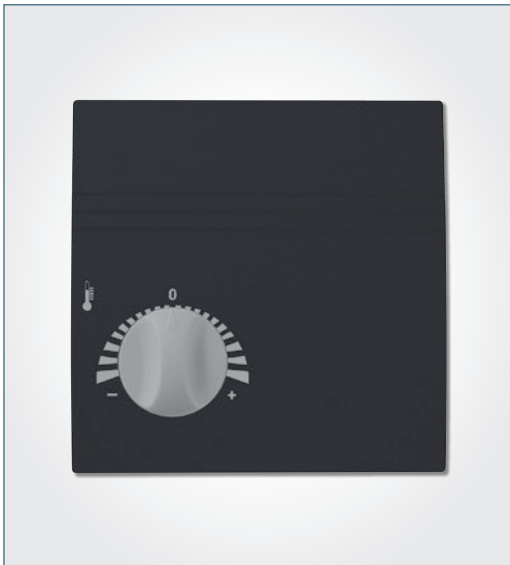
### Design examples



WRF04 PST3D,  
special model/special labelling



WRF04 P4T4D,  
special model/special labelling



WRF04 P,  
special painting



WRF04,  
special painting



WRF04 LCD PSD FS4



## WRF04 LCD x

Room and space temperature measurement with optional set point adjustment, fan speed, LCD display and manual override.

TECHNICAL DATA	
Measuring values	temperature
Output voltage	TRV: 1x 0..10 V
Output switch contact	Relay: switch contact 24 V   3 mA, floating Triac: 24 V ~   1 A, floating
Network technology	LON FT (free topology) RS485 Modbus
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	TRV: max. 0,6 W (24 V =)   1 VA (24 V ~) LON: typ. 0,8 W (24 V =)   2 VA (24 V ~) RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C)
Inputs	2x entry for floating contacts (with LON/RS485 Modbus)
Set point (P)	potentiometer, default value 10 k $\Omega$ (1 k $\Omega$   5 k $\Omega$ optional, for other values please request) active output 0..10 V (optional)
Rotary switch (S)	for fan stage adjustment (max. 5 stages) 5-stages (auto, 0, I, II, III) 2-stages (0, I) 3-stages (0, I, II) 4-stages (0, I, II, III) active output 0..10 V (optional)
Button (T)	for presence detection switching capacity max. 600 mW
LED (D)	for status feedback several LEDs possible (e.g. green, yellow, red)
Functions	TRV: 1 output 0..10 V AO2V: 2 inputs, 2 outputs 0..10 V DO2R: 2 inputs, 2 outputs relay DO2T: 2 inputs, 2 outputs Triac OVR: 2 inputs, 2 outputs (1x 0..10 V, 1 relay) OVT: 2 inputs, 2 outputs (1x 0..10 V, 1 Triac)
Display	LCD 29x12 mm, monochrome status-LED, multi-colored
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box ( $\varnothing=55$ mm) to be mounted flat onto the surface using adhesive foil (included) or screws
Notes	special labelling available on request special painting available on request for other sensors please request for other operating elements please request

## WRF04 LCD x

Item description: product | operating elements | TRV3 | fan stages | LED

Room operating unit with display temperature – TRV3 0..10 V, 0..50 °C					RU2
Item description	Inputs	0..10 V	Item no.		€
WRF04 LCD P TRV3, poti_active	-	1	637572		168,50
WRF04 LCD PSD TRV3, poti_active, FS5, LED green	-	1	637589		212,10
WRF04 LCD PTD TRV3, poti_active, LED green	-	1	412483		193,20
WRF04 LCD PSTD TRV3, poti_active, FS5, LED green	-	1	418874		228,10

Item description: product | operating elements | inputs/outputs | BUS | fan stages | LED



Room operating unit with display temperature – LON			RU2
Item description	Item no.		€
WRF04 LCD P LON	413442		217,40
WRF04 LCD PSD LON, FS5, LED green	446235		243,00
WRF04 LCD PTD LON, LED green	397568		225,60
WRF04 LCD PSTD LON, FS5, LED green	574839		259,00



Room operating unit with display temperature – AO2V RS485 Modbus						RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€
WRF04 LCD P AO2V RS485 Modbus	2	2	-	420020	✓	193,90
WRF04 LCD PSD AO2V RS485 Modbus, FS5, LED green	2	2	-	419987	✓	219,10
WRF04 LCD PTD AO2V RS485 Modbus, LED green	2	2	-	415620	✓	201,60
WRF04 LCD PSTD AO2V RS485 Modbus, FS5, LED green	2	2	-	538442	✓	235,10



Room operating unit with display temperature – DO2R RS485 Modbus						RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€
WRF04 LCD P DO2R RS485 Modbus	2	-	2	420327	✓	235,50
WRF04 LCD PSD DO2R RS485 Modbus, FS5, LED green	2	-	2	628822	✓	260,70
WRF04 LCD PTD DO2R RS485 Modbus, LED green	2	-	2	420334	✓	243,20



Room operating unit with display temperature – DO2T RS485 Modbus						RU2
Item description	Inputs	0..10 V	Triac	Item no.	Regulator	€
WRF04 LCD P DO2T RS485 Modbus	2	-	2	420815	✓	235,50
WRF04 LCD PSD DO2T RS485 Modbus, FS5, LED green	2	-	2	628839	✓	260,70
WRF04 LCD PTD DO2T RS485 Modbus, LED green	2	-	2	628846	✓	243,20

standard labelling refer to p. 148  
special labelling refer to p. 346

## WRF04 LCD x



Room operating unit with display temperature – OVR RS485 Modbus							RU2
Item description	Inputs	0..10 V	Relay	Item no.	Regulator	€	
WRF04 LCD P OVR RS485 Modbus	2	1	1	420891	✓	235,50	
WRF04 LCD PSD OVR RS485 Modbus, FS5, LED green	2	1	1	420914	✓	260,70	
WRF04 LCD PTD OVR RS485 Modbus, LED green	2	1	1	420907	✓	243,20	



Room operating unit with display temperature – OVT RS485 Modbus							RU2
Item description	Inputs	0..10 V	Triac	Item no.	Regulator	€	
WRF04 LCD P OVT RS485 Modbus	2	1	1	420952	✓	235,50	
WRF04 LCD PSD OVT RS485 Modbus, FS5, LED green	2	1	1	628877	✓	260,70	
WRF04 LCD PTD OVT RS485 Modbus, LED green	2	1	1	630122	✓	243,20	

Options		€
Item description		
Rotary switch S with 4 fan stages (FS4)		0,00
Rotary switch S with 3 fan stages (FS3)		0,00
Rotary switch S with 2 fan stages (FS2)		0,00
Default labelling P colour red+blue		6,00
Additional rotary switch		28,80
Additional button		22,00
Additional diode (LED)		18,00

Order example for different items:

**WRF04 LCD | PST3D | OVT | RS485 Modbus | FS4 | Poti\_5kΩ**

**WRF04 LCD** = product  
**PST3D** = potentiometer, rotary switch, button, 3x LED  
**OVT** = 2x inputs, 1x 0..10 V output, 1x Triac output  
**RS485 Modbus** = BUS  
**FS4** = rotary switch (S) with 4 fan stages  
**Poti\_5kΩ** = passive potentiometer 5kΩ

Accessories				AS1
Item description	Item no.	On stock	€	
Rawlplugs and screws (2 pcs. each)	102209	☹	0,80	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	☹	42,00	
Frame for surface mounting WRF04	111584	☹	12,40	



## JOY

Room thermostat in an appealing design for controlling a 3 step fancoil (type Fancoil 3DI), an electronic fancoil (type Fancoil EC 3DI) or for heating/cooling and controlling a 6-way valve (type HC). Used for individual control of temperature in commercial, industrial and residential buildings. The device combines a modern design with a 2,5" touch surface, which enables the single room controller to be used intuitively. 3 time channels with 4 periods of time can be configured via the menu. This device is suitable for a flush mount box. RS485 Modbus models are available.



JOY Fancoil pure white



JOY Fancoil black



JOY Heating/Cooling

### TECHNICAL DATA

Measuring values	temperature
Output switch contact	5x contact NO (2x heating & cooling, 3x fan stages) type EC: 2x contact NO (heating & cooling) +0..10 V = (to control EC fan) type HC: 2x contact NO (heating & cooling) +0..10 V = (for 6-way control valve) 240 V: load max. 3 A
Network technology	RS485 Modbus
Power supply	85..260 V ~
Power consumption	max. 2 VA (260 V ~)
Measuring range temp.	0..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	input for NTC10k or floating contact input digital for floating contact (not type BUS) input change-over (230 V ~)
Control functions	setpoint 0..+50 °C
Display	LCD 2,5", 240x160 px, backlight blue
Enclosure	PC pure white black hardened acrylic glass with high scratch resistance
Protection	IP30 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> inputs: terminal block, max. 1,0 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)



## JOY

Room thermostat heating/cooling flush mount with display – active							RU1
Item description	Inputs	0..10 V	Relay	Item no.	Regulator		€
JOY HC 3DI pure white	3	1	2	666855	✓		162,00
JOY HC 3DI black	3	1	2	666862	✓		174,00

Room thermostat fancoil flush mount with display – active							RU1
Item description	Inputs	0..10 V	Relay	Item no.	Regulator		€
JOY Fancoil 3DI pure white	3	-	5	614757	✓		162,00
JOY Fancoil 3DI black	3	-	5	656856	✓		174,00
JOY Fancoil EC 3DI pure white	3	1	2	649889	✓		162,00
JOY Fancoil EC 3DI black	3	1	2	656863	✓		174,00



Room thermostat heating/cooling flush mount with display – RS485 Modbus							RU1
Item description	Inputs	0..10 V	Relay	Item no.	Regulator		€
JOY HC RS485 Modbus pure white	2	1	2	666879	✓		168,00
JOY HC RS485 Modbus black	2	1	2	666886	✓		180,00

Room thermostat fancoil flush mount with display – RS485 Modbus							RU1
Item description	Inputs	0..10 V	Relay	Item no.	Regulator		€
JOY Fancoil RS485 Modbus pure white	2	-	5	614771	✓		168,00
JOY Fancoil RS485 Modbus black	2	-	5	639453	✓		180,00
JOY Fancoil EC RS485 Modbus pure white	2	1	2	648363	✓		168,00
JOY Fancoil EC RS485 Modbus black	2	1	2	656894	✓		180,00

### Options

Item description	€
Change-over sensor NTC10k (price on request)	

### Accessories

Item description	Item no.	On stock	AS1
Software/Plug-In for configuration (free)			0,00
SD card (2 GB)	500098	⊕	11,30





LCF Touch



## LCF Touch

Modern design flush mounting fan coil room thermostat, used for individual control of temperature in commercial, industrial and residential buildings. It is tailored for two-pipe and four-pipe fan coil units with two-wire electric valves. The device combines digital technology with a large LCD touch screen display, which enables the single room controller to be used intuitively. Integrated 7 day time clock with 4 time programs.

TECHNICAL DATA	
Measuring values	temperature
Output switch contact	5x contact NO (2x heating & cooling, 3x fan stages) 240 V: load max. 3 A
Network technology	RS485 Modbus
Power supply	90..265 V ~
Power consumption	max. 0,9 VA (265 V ~)
Measuring range temp.	+1..+50 °C
Accuracy temperature	±0,5 K (typ. at 21 °C)
Inputs	input for change-over sensor NTC10k (optional)
Control functions	setpoint +1..+50 °C factory setting (+16..+30°C)
Display	LCD 64x64 mm, touchscreen white background lighting
Enclosure	ABS, black, hardened acrylic glass with high scratch resistance
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

Room thermostat fancoil flush mount with display – active				RU1
Item description	Item no.	Regulator	€	
LCF Touch	575768	✓	122,10	



Room thermostat fancoil flush mount with display – RS485 Modbus				RU1
Item description	Item no.	Regulator	€	
LCF Touch RS485 Modbus	575775	✓	136,30	

Options	
Item description	€
Change-over sensor NTC10k (price on request)	



LCF

### LCF

The fan coil room thermostat has been designed for individual control of temperature in commercial, industrial and residential buildings. It is tailored for two-pipe and four-pipe fan coil with two-wire electric valves. With its flush mounted modern design the device combines digital technology with a large LCD display and additional buttons, which enables the single room controller to be used intuitively.

#### TECHNICAL DATA

Measuring values	temperature
Output switch contact	5x contact NO (2x heating & cooling, 3x fan stages) 250 V; load max. 5 A
Power supply	90..265 V ~
Power consumption	max. 0,9 W
Measuring range temp.	+1..+50 °C
Accuracy temperature	±1 K (typ. at 21 °C)
Inputs	input for change-over sensor NTC10k (optional)
Display	LCD 355x485 mm white background lighting
Enclosure	ABS, hardened acrylic glass with high scratch resistance, pure white
Protection	IP20 according to EN 60529
Cable entry	rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-10..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

#### Room thermostat fancoil flush mount with display – active

RU1

Item description	Item no.	Regulator	€
LCF	575751	✓	40,00

#### Options

Item description	€
Change-over sensor NTC10k (price on request)	



LCT

## LCT

The electronic room thermostat is designed for controlling temperature in commercial, industrial and residential buildings and also underfloor heating applications. LCD temperature display, dial set point and relay on/off output. Additional input is available for an external temperature sensor if required.

### TECHNICAL DATA

Measuring values	temperature
Output switch contact	heating: 250 V ~, max. 16 A   30 V =, max. 10 A
Power supply	100..240 V ~
Power consumption	max. 0,5 W
Measuring range temp.	0..+40 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Display	LCD for temperature and set point
Enclosure	PC, pure white
Protection	IP20 according to EN 60529
Cable entry	rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)

### Room thermostat surface mount with display – active

RU1

Item description	Item no.	Regulator	€
LCT	573382	✓	25,20

### Options

Item description	€
Additional sensor NTC100k (price on request)	



LCA

## LCA

The flat room thermostat is designed for heating or cooling via 2-pipe system in commercial, industrial and residential buildings useable with underfloor heating applications or for overheat protection.

### TECHNICAL DATA

Measuring values	temperature
Output switch contact	changeover contact, heating & cooling max. 230 V ~ / 2 A (resistive, non-floating)
Power supply	230 V ~
Sensor	bimetallic contact
Inputs	entry for night reduction -3 K, 230 V ~
Control functions	setpoint
Functions	heating or cooling ON/OFF night reduction
Set point range	+5..+30 °C
Enclosure	ABS, pure white brilliant
Protection	IP30 according to EN 60529
Cable entry	rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)

### Room thermostat surface mount – active

RU1

Item description	Item no.	Regulator	€
LCA	660822	✓	31,50



LCA D

## LCA D

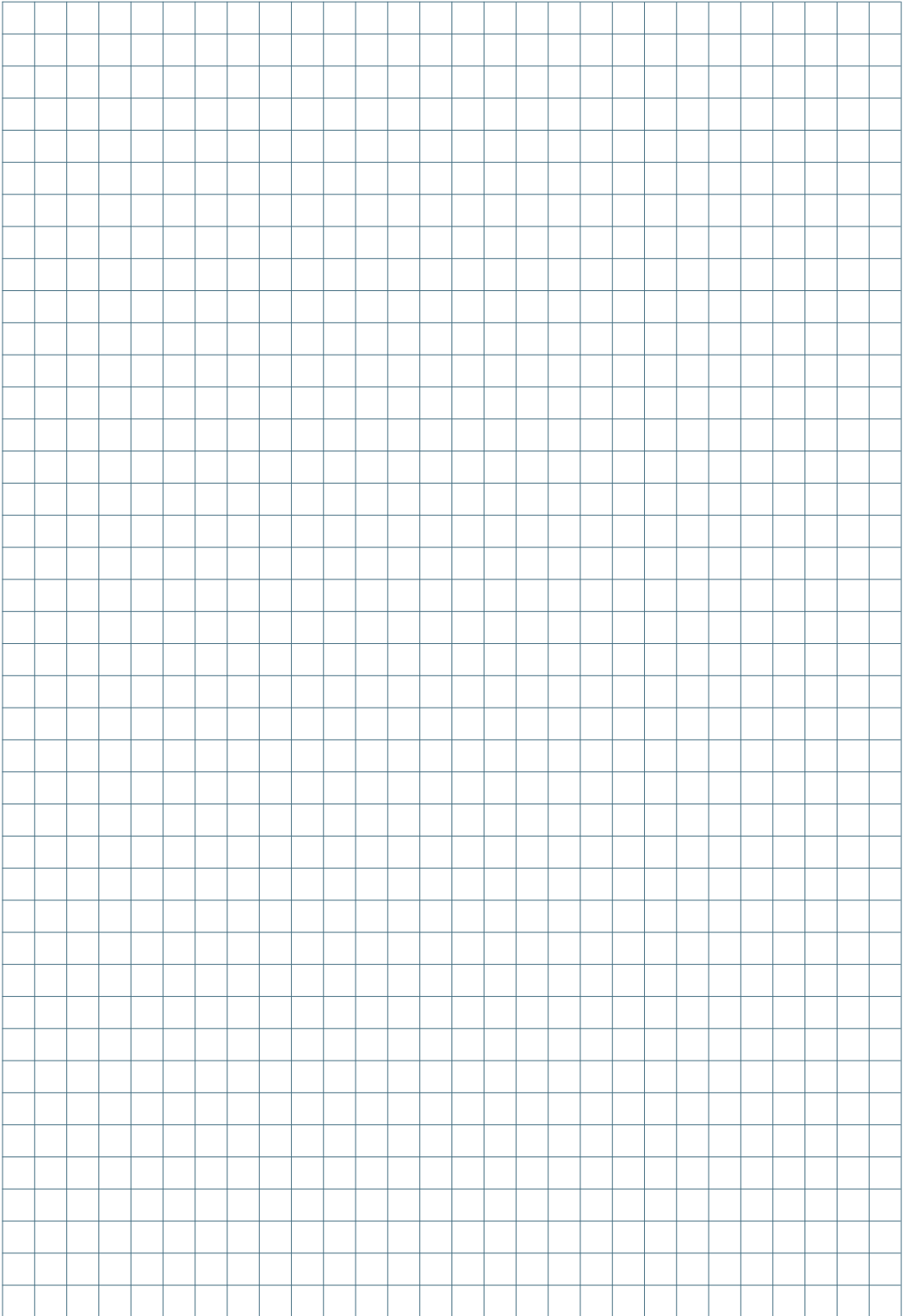
The flat room thermostat is designed for heating via 2-pipe system in commercial, industrial and residential buildings useable with underfloor heating applications or for overheat protection.

### TECHNICAL DATA

Measuring values	temperature
Output switch contact	NC contact heating max. 230 V ~ / 2 A (resistive, non-floating)
Power supply	230 V ~
Sensor	bimetallic contact
LED (D)	heating „ON“
Control functions	setpoint
Functions	heating ON/OFF
Set point range	+5..+30 °C
Enclosure	ABS, pure white brilliant
Protection	IP30 according to EN 60529
Cable entry	rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)

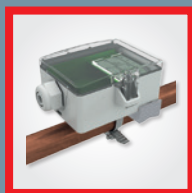
### Room thermostat surface mount with LED – active

Item description	Item no.	Regulator	RU1	€
LCA D	660815	✓		33,50



# Temperature

High-quality materials, modern production processes, and many years of experience: We produce temperature sensors for various applications in buildings for heating, refrigeration and air conditioning systems.



## Sample applications

169

## Room sensors

WRF04	Surface mount temperature sensor	172
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## Duct sensors

AKF10+	Duct temperature sensor	183
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MWF+	Averaging temperature sensor	199
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## Frost protection thermostats

TFR+	Thermostat frost protection	204
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## Immersion sensors

SFK02+	Temperature sensor liquid temp.	207
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SFKH02+	Temperature sensor liquid temp.	216
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SFKH01	Temperature sensor liquid temp.	224
SFK03	Temperature sensor liquid temp.	227
SFKH03	Temperature sensor liquid temp.	231
RGS03	High temperature sensor	235

## Outdoor sensors

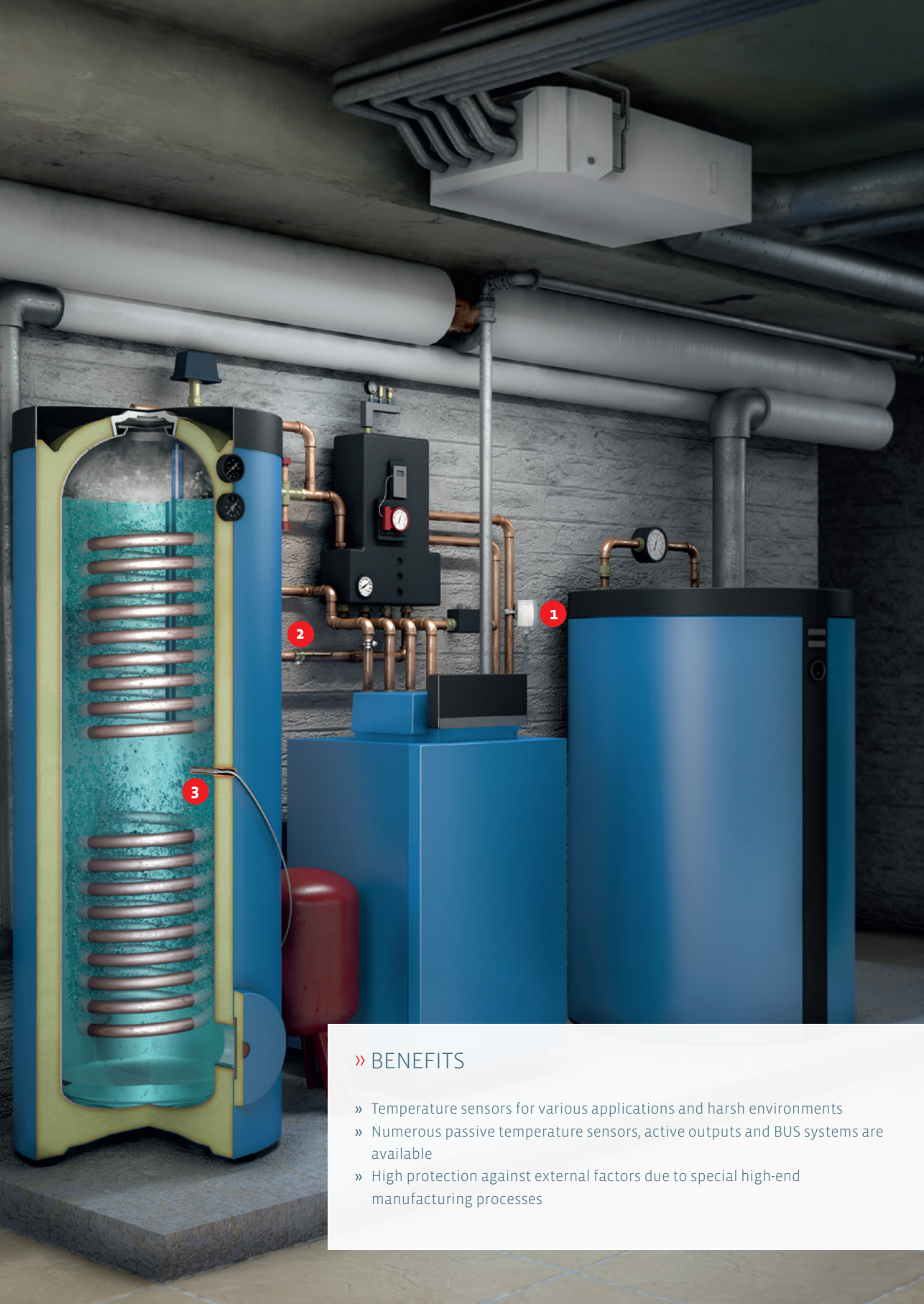
AGS54+	Outdoor temp. sensor	237
AGS55+	Outdoor temp. sensor	239

## Contact sensors

VFG54+	Temperature sensor pipe	242
AF25	Temperature sensor pipe	245
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OF14	Temperature sensor glass surface	249

## Cable sensors

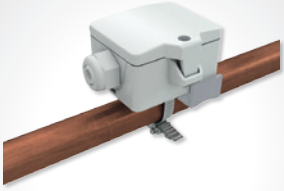


TF14	Cable temperature sensor	251
TF25	Cable temperature sensor	256



## » BENEFITS

- » Temperature sensors for various applications and harsh environments
- » Numerous passive temperature sensors, active outputs and BUS systems are available
- » High protection against external factors due to special high-end manufacturing processes



<p style="text-align: right;"><b>1</b></p>  <p style="text-align: center;"><b>VFG54+</b></p> <p>Contact temperature sensor, available with RS485-Modbus interfaces</p>	<p style="text-align: right;"><b>2</b></p>  <p style="text-align: center;"><b>AF25</b></p> <p>Cable/Contact temperature sensor, various cable lengths are available</p>	<p style="text-align: right;"><b>3</b></p>  <p style="text-align: center;"><b>TF25</b></p> <p>Cable temperature sensor, available with LON interface</p>
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## OPTIMUM TEMPERATURE FOR YOUR APPLICATION

Our sensors are available in various designs and with numerous temperature sensor options, active outputs and BUS systems. Special manufacturing processes guarantee reliable operation even in demanding applications.



## » BENEFITS

- » Temperature sensors for various applications and harsh environments
- » Numerous passive temperature sensors, active outputs and BUS systems are available
- » High protection against external factors due to special high-end manufacturing processes

<p style="text-align: right;"><b>1</b></p>  <p style="text-align: center;"><b>AGS55+</b></p> <p>Outdoor/industrial temperature sensor, available with LON or Modbus interfaces as well as LCD</p>	<p style="text-align: right;"><b>2</b></p>  <p style="text-align: center;"><b>AKF10+</b></p> <p>Duct-/ immersion temperature sensor, available with LON or Modbus interfaces as well as LCD</p>	<p style="text-align: right;"><b>3</b></p>  <p style="text-align: center;"><b>RPF40</b></p> <p>Room pendulum temperature sensor, various cable lengths are available</p>
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## IDEAL TEMPERATURE FOR YOUR APPLICATION

Our sensors are available in various designs and with numerous temperature sensor options, active outputs and BUS systems. Special manufacturing processes guarantee reliable operation even in demanding applications.



WRF04



WRF04 LCD



WRF04  
custom paint alusilver

## WRF04

Surface mounted room sensor for temperature measuring, with set point and fan stage adjustment, manual override for room and office applications.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 700 Ω
Network technology	BACnet MS/TP KNX (TP) LON FT (free topology) RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%) KNX: supply via BUS
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =) BACnet: typ. 0,4 W (24 V =)   0,6 VA (24 V ~) KNX: 0,6 W (24 V =)   1,2 VA (24 V ~) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~) LCD TRV: typ. 0,6 W (24 V =)   1,0 VA (24 V ~) LCD LON: typ. 0,85 W (24 V =)   2,0 VA (24 V ~) LCD RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV3   TRA3: 0..+50 °C TRV8   TRA8: -15..+35 °C BUS: 0..+50 °C passive: -35..+70 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Display	LCD 29x12 mm, monochrome, (optional)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)
Notes	special painting available on request for other sensors please request multi-conductor connection on request enclosure stainless steel available (see options)



## WRF04

Item description: product | sensor

Room sensor temperature – passive				TP3
Item description	Item no.	On stock	€	
WRF04 without sensor	212892		12,70	
WRF04 PT100	193221	⊕	19,70	
WRF04 PT100 1/3 DIN	197731		23,40	
WRF04 PT1000	191623	⊕	21,90	
WRF04 PT1000 1/3 DIN	207980		24,90	
WRF04 Ni1000	191616	⊕	21,60	
WRF04 Ni1000TK5000	193214	⊕	25,10	
WRF04 NTC10k	207584	⊕	18,40	
WRF04 NTC10k Precon	197618		18,40	
WRF04 NTC20k	193177	⊕	18,40	
WRF04 NTC1,8k	236775	⊕	18,40	
WRF04 LM235Z	193191	⊕	20,20	
WRF04 DS18B20 1-wire	349901		19,70	

Options		€
Item description		
3-wire connection (3-wire)		1,85
4-wire connection (4-wire)		3,70
Stainless steel enclosure (VAG)		92,80
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Order example for different items:

**WRF04 | FeT | 3-wire | VAG**

**WRF04** = product

**FeT** = sensor

**3-wire** = number of wires

**VAG** = stainless steel enclosure

Item description: product | TRV/TRA MultiRange

Room sensor temperature – active 0..10 V   4..20 mA					TP2	
Item description	Inputs	0..10 V	4..20 mA	Item no.	On stock	€
WRF04 TRV MultiRange	-	1	-	479202	⊕	64,60
WRF04 TRA MultiRange	-	-	1	479196	⊕	64,60

Item description: product | AO2V | BUS

## WRF04



Room sensor temperature – active BUS					TP2
Item description	Inputs	0..10 V	4..20 mA	Item no.	€
WRF04 AO2V BACnet	2	2	-	546065	149,90
WRF04 KNX	-	-	-	585989	185,00
WRF04 LON	-	-	-	193689	173,80
WRF04 AO2V RS485 Modbus	2	2	-	419970	149,90

### Options

Item description	€
Stainless steel enclosure (VAG)	92,80

Item description: product | TRV MultiRange

Room sensor with LCD temperature – active TRV 0..10 V					TP2
Item description	Inputs	0..10 V	4..20 mA	Item no.	€
WRF04 LCD TRV MultiRange	-	1	-	593878	101,90

Item description: product | AO2V | BUS



Room sensor with LCD temperature – active BUS					TP2
Item description	Inputs	0..10 V	4..20 mA	Item no.	€
WRF04 LCD LON	-	-	-	398084	213,40
WRF04 LCD AO2V RS485 Modbus	2	2	-	420044	189,50

### Accessories

Item description	Item no.	On stock	AS1
Rawlplugs and screws (2 pcs. each)	102209	☺	0,80
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737	☺	42,00
Frame for surface mounting WRF04	111584	☺	12,40
Ball stroke protection BS150, transparent (for series WRF04)	647007	☺	22,70



WRF04 IR

## WRF04 IR

Surface mounted room sensor for measuring of radiation temperature in room and office applications. Designed for control and monitoring systems.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor
Measuring range temp.	passive: -35..+70 °C
Accuracy temperature	passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	2-wire (standard)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)
Notes	special painting available on request for other sensors please request

Room sensor radiation temperature – passive			TP2
Item description	Item no.		€
WRF04 IR PT1000	652094		75,00
WRF04 IR Ni1000	652063		75,00
WRF04 IR NTC10k	652100		75,00

Accessories				AS1
Item description	Item no.	On stock		€
Rawlplugs and screws (2 pcs. each)	102209	⊕		0,80
Frame for surface mounting WRF04	111584	⊕		12,40



WRF06 Busch-Jaeger future® linear



WRF06 Gira E2 pure white

## WRF06

Flush mounted sensor for measuring temperature in room and office applications. Designed for control and monitoring systems.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V AO2V: 2x 0..10 V
Network technology	BACnet MS/TP LON FT (free topology) RS485 Modbus
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) BACnet: typ. 0,9 W (24 V =)   1 VA (24 V ~) LON: typ. 0,7 W (24 V =)   2,5 VA (24 V ~) RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~)
Measuring range temp.	0..+50 °C passive: -35..+70 °C
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Inputs	DI4: 4x for floating switch contact
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.1, K.5 aluminum   stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box ( $\varnothing=55$ mm)





## WRF06

Item description: product | sensor | switch range | colour

Room sensor temperature – passive			TP1
Item description	Item no.	€	
WRF06 without sensor Gira E2 pure white	626194	36,20	
WRF06 PT100 Gira E2 pure white	128933	43,20	
WRF06 PT100 1/3 DIN Gira E2 pure white	137768	46,90	
WRF06 PT1000 Gira E2 pure white	158299	45,40	
WRF06 PT1000 1/3 DIN Gira E2 pure white	160773	48,40	
WRF06 Ni1000 Gira E2 pure white	138314	45,10	
WRF06 Ni1000TK5000 Gira E2 pure white	121866	48,60	
WRF06 NTC10k Gira E2 pure white	191050	41,90	
WRF06 NTC10k Precon Gira E2 pure white	265136	41,90	
WRF06 NTC20k Gira E2 pure white	199797	41,90	
WRF06 NTC1,8k Gira E2 pure white	257794	41,90	
WRF06 LM235Z Gira E2 pure white	121798	44,50	

Options		€
Item description		€
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Item description: product | TRV/BUS | switch range | colour

Room sensor temperature – active 0..10 V			TP1
Item description	Item no.	€	
WRF06 TRV3 Gira E2 pure white	627160	107,20	



Room sensor temperature – active BACnet, LON, RS485 Modbus					TP1
Item description	Inputs	0..10 V	Item no.	€	
WRF06 AO2V BACnet Gira E2 pure white	2	2	624206	169,00	
WRF06 DI4 LON Gira E2 pure white	4	-	644389	188,10	
WRF06 AO2V LON Gira E2 pure white	2	2	627177	188,10	
WRF06 DI4 RS485 Modbus Gira E2 pure white	4	-	644402	164,50	
WRF06 AO2V RS485 Modbus Gira E2 pure white	2	2	624190	164,50	

Options		€
Item description		€
Switch ranges Busch-Jaeger Busch-balance® SI   Reflex SI		0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3		0,00
Switch range Gira Esprit		22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)		35,10
Other switch ranges		12,50

Accessories				AS1
Item description	Item no.	On stock	€	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737		42,00	



RDF18

## RDF18

Ceiling flush mounted sensor for temperature measurement in room and office spaces. Designed for control and monitoring applications.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive sensor
Measuring range temp.	passive: -35..+70 °C
Accuracy temperature	passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	2-wire (standard)
Protection	IP30 according to EN 60529
Connection electrical	connection wire PVC, 2x Ø=0,25 mm <sup>2</sup> , grey 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Sensor head	ABS, white, Ø=35 mm
Ambient condition	-35..+70 °C, max. 85% rH non-condensing
Mounting	facet mounting
Notes	active types for temperature and humidity available (see humidity – FT-RDF18)

Item description: product | sensor | cable length (L)

Ceiling flush mount sensor temperature – passive		TP2
Item description	Item no.	€
RDF18 PT100 L1000	471237	34,60
RDF18 PT100 1/3 DIN L1000	471244	38,30
RDF18 PT1000 L1000	459235	36,80
RDF18 PT1000 1/3 DIN L1000	458276	39,80
RDF18 Ni1000 L1000	463669	36,80
RDF18 Ni1000TK5000 L1000	471251	36,50
RDF18 NTC10k L1000	457828	33,20
RDF18 NTC10k Precon L1000	471282	33,20
RDF18 NTC20k L1000	459143	33,20
RDF18 100 NTC1,8k	471275	33,20
RDF18 LM235Z L1000	456296	35,00

### Options

Item description	€
Add per meter of connection cable	0,70
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**RDF18 | FeT | L2000**

**RDF18** = product

**FeT** = sensor

**L2000** = cable length (mm)



RPF40 passive



RPF40 radiation sensor



RPF40+ TRV/TRA

## RPF40

Temperature measurement for large rooms/spaces (e.g. open-plan offices, galleries, production plants). Available with black bulb for radiator or similar applications. Designed for control and monitoring applications. Active models replace RPF40 in enclosure USE-S.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V
Output Amp	TRA: 1x 4..20 mA
Power supply	TRV: 24 V = or 24 V ~ (±20%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV3   TRA3: 0..+50 °C passive: -35..+70 °C
Accuracy temperature	TRV   TRA: ±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active)
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm (only active)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> (only active) sensor wire PVC soft, Ø=0,25 mm <sup>2</sup> , white (grey with radiation sensor) 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Sensor head	white black (only radiation sensor) Ø=40 mm
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	other sensors and cable lengths on request multi-conductor connection on request

## RPF40

Item description: product | sensor | colour (sensor head) | cable length(L)

Room pendulum sensor temperature – passive			TP2
Item description	Item no.	€	
RPF40 PT100 white L1000	350006	51,00	
RPF40 PT100 1/3 DIN white L1000	265621	54,10	
RPF40 PT1000 white L1000	321068	52,80	
RPF40 PT1000 1/3 DIN white L1000	329569	55,30	
RPF40 Ni1000 white L1000	329279	52,60	
RPF40 Ni1000TK5000 white L1000	144193	55,60	
RPF40 NTC10k white L1000	351980	49,80	
RPF40 NTC10k Precon white L1000	164573	49,80	
RPF40 NTC20k white L1000	334792	49,80	
RPF40 NTC1,8k weiß L1000	334549	49,80	
RPF40 LM235Z white L1000	339476	50,50	

Options		€
Item description		€
Add per meter of connection cable		0,70
Sensor head black (radiation sensor) with grey sensor wire		0,00
Connection box USE-S		13,80
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Item description: product | TRV/TRA MultiRange | colour (sensor head) | cable length(L)

Room pendulum sensor temperature – active TRV 0..10 V   TRA 4..20 mA			TP2
Item description	Item no.	€	
RPF40+ TRV MultiRange white L1000	658409	113,40	
RPF40+ TRA MultiRange white L1000	658416	113,40	

Options		€
Item description		€
Add per meter of connection cable		0,70

Order example for different items:

**RPF40 | FeT | black | L2000 | AGS54**

**RPF40** = product

**FeT** = sensor

**black** = colour (radiation sensor)

**L2000** = cable length (mm)

**AGS54** = connection box AGS54

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-S pure white	667722	☺	5,50	
For cable entries and sealing inserts please refer to chapter "Accessories"				



## RPF100

Pendulum temperature sensor for temperature measurement in large/high rooms/spaces (e.g. open-plan offices, galleries, production plants). Active models replace RPF100 in enclosure USE-S.



RPF100 passive



RPF100+ TRV/TRA



RPF100 LON

TECHNICAL DATA	
Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V
Output Amp	TRA: 1x 4..20 mA
Power supply	TRV: 24 V = or 24 V ~ (±20%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV3   TRA3: 0..+50 °C passive: -35..+70 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active) LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm LON: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm removable (only enclosure USE)
Connection electrical	active: terminal block, max. 1,5 mm <sup>2</sup> passive: 2-wire (default), 3-wire or 4-wire sensor wire white 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	stainless steel V2A Ø=15 mm, mounting length 100 mm hex pressed
Ambient condition	-35..+70 °C, max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	other sensors and cable lengths on request multi-conductor connection on request

## RPF100

Item description: product | sensor | cable length (L)

Room pendulum sensor temperature – passive			TP2
Item description	Item no.	€	
RPF100 PT100 L1000	81566	66,30	
RPF100 PT100 1/3 DIN L1000	90780	69,50	
RPF100 PT1000 L1000	90827	68,20	
RPF100 PT1000 1/3 DIN L1000	90865	70,70	
RPF100 Ni1000 L1000	90902	67,90	
RPF100 Ni1000TK5000 L1000	160612	70,90	
RPF100 NTC10k L1000	91060	65,20	
RPF100 NTC10k Precon L1000	91107	65,20	
RPF100 NTC20k L1000	219952	65,20	
RPF100 NTC1,8k L1000	278331	65,20	
RPF100 LM235Z L1000	91145	65,90	

Options		€
Item description		€
Connection box USE-S 63x51x40 mm		13,80
Add per meter of sensor wire		0,70
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25

Item description: product | TRV/TRA MultiRange | cable length (L)

Room pendulum sensor temperature – active TRV 0..10 V   TRA 4..20 mA			TP2
Item description	Item no.	€	
RPF100+ TRV MultiRange L1000	658423	128,70	
RPF100+ TRA MultiRange L1000	658430	128,70	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-S pure white	667722	☉	5,50	
For cable entries and sealing inserts please refer to chapter "Accessories"				

Item description: product | BUS | cable length (L)



Room pendulum sensor temperature – active BUS			TP2
Item description	Item no.	€	
RPF100 LON L1000	96720	200,30	

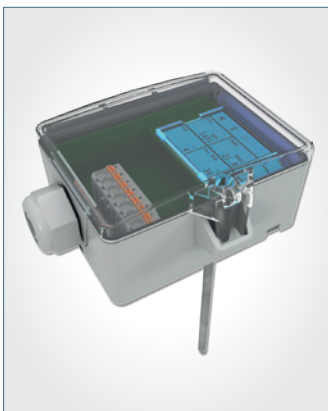
Options		€
Item description		€
Add per meter of sensor wire		0,70



AKF10+ passive / TRV / TRA



AKF10+ RS485 Modbus / relay



AKF10+ LCD

## AKF10+

Duct/Immersion sensor for measurement of air temperature and other gaseous mediums for HVAC applications (e.g. supply and exhaust ducts). Replaces AKF10 in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus) and pocket Ø=6 mm for faster response. Can be used as an immersion temperature sensor combined with a thermowell pocket.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V, LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	TRV: 24 V = or 24 V ~ (±20%) TRA: 15..24 V = (±10%) LON: 15..24 V = (±10%) or 24 V ~ (±10%) RS485 Modbus: 24 V = or 24 V ~ (±20%)
Power consumption	TRV: typ. 0,35 W (24 V =)   0,82 VA (24 V ~) TRA: typ. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: 0..+160 °C LON: -45..+130 °C RS485 Modbus: -50..+160 °C AA/LCD/relay: optionally configured via Thermokon USEapp passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	measuring current typ. <1 mA ±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529, SI-Protection (not possible for electronic Sensors)
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm, removable (only enclosure USE)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=6 mm

## AKF10+

	mounting length: 50   100   150   200   250   300   450 mm
Ambient condition	enclosure: -35..+70 °C, max. 85% rH short term condensation enclosure passive: -35..+90 °C, max. 85% rH short term condensation mounting clip: -35..+90 °C
Mounting	with duct temperature of 90..120 °C mounting flange MF6DS flexible, at 120..260 °C mounting flange MF6 (brass) is recommended
Delivery contents	incl. mounting clip enclosure USE-S pure white LCD/BUS/relay: incl. mounting flange MF6DS flexible



Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive PT100 TP3		
Item description	Item no.	€
AKF10+ PT100 050.06	621175	31,90
AKF10+ PT100 100.06	621182	33,20
AKF10+ PT100 150.06	621199	34,50
AKF10+ PT100 200.06	621205	35,00
AKF10+ PT100 250.06	621212	36,60
AKF10+ PT100 300.06	621229	37,80
AKF10+ PT100 450.06	621236	39,40

Duct/Immersion sensor -50..+160 °C – passive PT100 1/3 DIN TP3		
Item description	Item no.	€
AKF10+ PT100 1/3 DIN 050.06	621243	35,70
AKF10+ PT100 1/3 DIN 100.06	621250	36,90
AKF10+ PT100 1/3 DIN 150.06	621267	38,20
AKF10+ PT100 1/3 DIN 200.06	621274	38,70
AKF10+ PT100 1/3 DIN 250.06	621281	40,30
AKF10+ PT100 1/3 DIN 300.06	621298	41,60
AKF10+ PT100 1/3 DIN 450.06	621304	43,10

Duct/Immersion sensor -50..+160 °C – passive PT1000 TP3		
Item description	Item no.	€
AKF10+ PT1000 050.06	621311	34,10
AKF10+ PT1000 100.06	621328	35,40
AKF10+ PT1000 150.06	621335	36,70
AKF10+ PT1000 200.06	621342	37,20
AKF10+ PT1000 250.06	621359	38,80
AKF10+ PT1000 300.06	621366	40,00
AKF10+ PT1000 450.06	621373	41,60

Duct/Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN TP3		
Item description	Item no.	€
AKF10+ PT1000 1/3 DIN 050.06	620796	37,10
AKF10+ PT1000 1/3 DIN 100.06	620802	38,40
AKF10+ PT1000 1/3 DIN 150.06	620819	39,60
AKF10+ PT1000 1/3 DIN 200.06	620826	40,10
AKF10+ PT1000 1/3 DIN 250.06	620833	41,80
AKF10+ PT1000 1/3 DIN 300.06	620840	43,00
AKF10+ PT1000 1/3 DIN 450.06	620857	44,60

Duct/Immersion sensor -50..+160 °C – passive Ni1000 TP3		
Item description	Item no.	€
AKF10+ Ni1000 050.06	620932	33,80
AKF10+ Ni1000 100.06	620949	35,10
AKF10+ Ni1000 150.06	620956	36,40
AKF10+ Ni1000 200.06	620963	36,90
AKF10+ Ni1000 250.06	620970	38,50
AKF10+ Ni1000 300.06	620987	39,70
AKF10+ Ni1000 450.06	620994	41,30

Duct/Immersion sensor -50..+160 °C – passive Ni1000TK5000 TP3		
Item description	Item no.	€
AKF10+ Ni1000TK5000 050.06	621007	37,30
AKF10+ Ni1000TK5000 100.06	621014	38,60
AKF10+ Ni1000TK5000 150.06	621021	39,90
AKF10+ Ni1000TK5000 200.06	621038	40,40
AKF10+ Ni1000TK5000 250.06	621045	42,00
AKF10+ Ni1000TK5000 300.06	621052	43,20
AKF10+ Ni1000TK5000 450.06	621069	44,80



## AKF10+

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50...+150 °C – passive NTC10k TP3		
Item description	Item no.	€
AKF10+ NTC10k 050.06	620864	30,60
AKF10+ NTC10k 100.06	620871	31,90
AKF10+ NTC10k 150.06	620888	33,20
AKF10+ NTC10k 200.06	620895	33,60
AKF10+ NTC10k 250.06	620901	35,30
AKF10+ NTC10k 300.06	620918	36,50
AKF10+ NTC10k 450.06	620925	38,10

Duct/Immersion sensor -50...+150 °C – passive NTC10k Precon TP3		
Item description	Item no.	€
AKF10+ NTC10k Precon 050.06	621380	30,60
AKF10+ NTC10k Precon 100.06	621397	31,90
AKF10+ NTC10k Precon 150.06	621403	33,20
AKF10+ NTC10k Precon 200.06	621410	33,60
AKF10+ NTC10k Precon 250.06	621427	35,30
AKF10+ NTC10k Precon 300.06	621434	36,50
AKF10+ NTC10k Precon 450.06	621441	38,10

Duct/Immersion sensor -50...+150 °C – passive NTC20k TP3		
Item description	Item no.	€
AKF10+ NTC20k 050.06	621458	30,60
AKF10+ NTC20k 100.06	621465	31,90
AKF10+ NTC20k 150.06	621472	33,20
AKF10+ NTC20k 200.06	621489	33,60
AKF10+ NTC20k 250.06	621496	35,30
AKF10+ NTC20k 300.06	621502	36,50
AKF10+ NTC20k 450.06	621519	38,10

Duct/Immersion sensor -50...+150 °C – passive NTC1,8k TP3		
Item description	Item no.	€
AKF10+ NTC1,8k 050.06	643030	30,60
AKF10+ NTC1,8k 100.06	632928	31,90
AKF10+ NTC1,8k 150.06	632935	33,20
AKF10+ NTC1,8k 200.06	632942	33,60
AKF10+ NTC1,8k 250.06	632959	35,30
AKF10+ NTC1,8k 300.06	643047	36,50
AKF10+ NTC1,8k 450.06	643054	38,10

Duct/Immersion sensor -50...+120 °C – passive LM235Z TP3		
Item description	Item no.	€
AKF10+ LM235Z 050.06	621106	32,40
AKF10+ LM235Z 100.06	621113	33,60
AKF10+ LM235Z 150.06	621120	34,90
AKF10+ LM235Z 200.06	621137	35,40
AKF10+ LM235Z 250.06	621144	37,10
AKF10+ LM235Z 300.06	621151	38,30
AKF10+ LM235Z 450.06	621168	39,80

Duct/Immersion sensor -50...+120 °C – passive DS18B20 1-wire TP2		
Item description	Item no.	€
AKF10+ DS18B20 1-wire 050.06	621526	31,90
AKF10+ DS18B20 1-wire 100.06	621533	33,20
AKF10+ DS18B20 1-wire 150.06	621540	34,50
AKF10+ DS18B20 1-wire 200.06	621557	35,00
AKF10+ DS18B20 1-wire 250.06	621564	36,60
AKF10+ DS18B20 1-wire 300.06	621571	37,80
AKF10+ DS18B20 1-wire 450.06	621588	39,40

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80...+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25
Price reduction to PT100 for sensor KTY81-110   KTY81-121   KTY81-122   KTY81-210	-3,40

Order example for different items:

**AKF10+ | FeT | 450.06 | 3-wire | T260**

AKF10+ = product  
 FeT = sensor  
 450.06 = pocket (length.Ø)  
 3-wire = number of wires  
 T260 = temperature

**AKF10+**

Item description: product | TRV/TRA | pocket (length.Ø)

Duct/Immersion sensor temperature – active 0..10 V				TP3
Item description	Item no.	On stock	€	
AKF10+ TRV MultiRange 050.06	621595	☹	74,20	
AKF10+ TRV MultiRange 100.06	621601	☹	75,20	
AKF10+ TRV MultiRange 150.06	621618	☹	76,10	
AKF10+ TRV MultiRange 200.06	621625	☹	76,50	
AKF10+ TRV MultiRange 250.06	621632	☹	77,80	
AKF10+ TRV MultiRange 300.06	621649	☹	78,60	
AKF10+ TRV MultiRange 450.06	621656	☹	79,80	

Duct/Immersion sensor with Display temperature – active 0..10 V				TP2
Item description	USEapp	Item no.	€	
AKF10+ LCD TRV MultiRange 050.06	✓	663380	145,90	
AKF10+ LCD TRV MultiRange 100.06	✓	663397	146,90	
AKF10+ LCD TRV MultiRange 150.06	✓	663403	147,80	
AKF10+ LCD TRV MultiRange 200.06	✓	663410	148,20	
AKF10+ LCD TRV MultiRange 250.06	✓	663427	149,50	
AKF10+ LCD TRV MultiRange 300.06	✓	663434	150,30	
AKF10+ LCD TRV MultiRange 450.06	✓	663441	151,50	

Duct/Immersion sensor temperature – active 4..20 mA				TP3
Item description	Item no.	On stock	€	
AKF10+ TRA MultiRange 050.06	621663	☹	74,20	
AKF10+ TRA MultiRange 100.06	621670	☹	75,20	
AKF10+ TRA MultiRange 150.06	621687	☹	76,10	
AKF10+ TRA MultiRange 200.06	621694	☹	76,50	
AKF10+ TRA MultiRange 250.06	621700	☹	77,80	
AKF10+ TRA MultiRange 300.06	621717	☹	78,60	
AKF10+ TRA MultiRange 450.06	621724	☹	79,80	

Duct/Immersion sensor with display temperature – active 4..20 mA				TP2
Item description	USEapp	Item no.	€	
AKF10+ LCD TRA MultiRange 050.06	✓	663526	145,90	
AKF10+ LCD TRA MultiRange 100.06	✓	663533	146,90	
AKF10+ LCD TRA MultiRange 150.06	✓	663540	147,80	
AKF10+ LCD TRA MultiRange 200.06	✓	663557	148,20	
AKF10+ LCD TRA MultiRange 250.06	✓	663564	149,50	
AKF10+ LCD TRA MultiRange 300.06	✓	663571	150,30	
AKF10+ LCD TRA MultiRange 450.06	✓	663588	151,50	

## AKF10+

Item description: product | TRV/TRA | pocket (length.Ø)

Duct/Immersion sensor temperature – active 0..10 V + relay				TP2
Item description	USEapp	Item no.	€	
AKF10+ TRV MultiRange 050.06 relay	✓	663304	145,20	
AKF10+ TRV MultiRange 100.06 relay	✓	663311	146,20	
AKF10+ TRV MultiRange 150.06 relay	✓	663328	147,10	
AKF10+ TRV MultiRange 200.06 relay	✓	663335	147,50	
AKF10+ TRV MultiRange 250.06 relay	✓	663342	148,80	
AKF10+ TRV MultiRange 300.06 relay	✓	663359	149,60	
AKF10+ TRV MultiRange 450.06 relay	✓	663366	150,80	

Duct/Immersion sensor with display temperature – active 0..10 V + relay				TP2
Item description	USEapp	Item no.	€	
AKF10+ LCD TRV MultiRange 050.06 relay	✓	663458	175,20	
AKF10+ LCD TRV MultiRange 100.06 relay	✓	663465	176,20	
AKF10+ LCD TRV MultiRange 150.06 relay	✓	663472	177,10	
AKF10+ LCD TRV MultiRange 200.06 relay	✓	663489	177,50	
AKF10+ LCD TRV MultiRange 250.06 relay	✓	663496	178,80	
AKF10+ LCD TRV MultiRange 300.06 relay	✓	663502	179,60	
AKF10+ LCD TRV MultiRange 450.06 relay	✓	663519	180,80	

Options	
Item description	€
Temperature -80..+260 °C (T260)	10,90

Order example for different items:

**AKF10+ | TRV MultiRange | 450.06 | T260**

**AKF10+** = product

**TRV MultiRange** = output

**450.06** = pocket (length.Ø)

**T260** = temperature

Item description: product | BUS | pocket (length.Ø)

## AKF10+



Duct/Immersion sensor temperature – active LON			TP2
Item description	Item no.	€	
AKF10+ LON 050.06	621748	186,00	
AKF10+ LON 100.06	621755	187,30	
AKF10+ LON 150.06	621762	188,60	
AKF10+ LON 200.06	621779	189,00	
AKF10+ LON 250.06	621786	190,70	
AKF10+ LON 300.06	621793	191,90	
AKF10+ LON 450.06	621816	193,40	



Duct/Immersion sensor temp. – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
AKF10+ RS485 Modbus 050.06	✓	621823	106,20	
AKF10+ RS485 Modbus 100.06	✓	621830	107,20	
AKF10+ RS485 Modbus 150.06	✓	621847	108,10	
AKF10+ RS485 Modbus 200.06	✓	621854	108,50	
AKF10+ RS485 Modbus 250.06	✓	621861	109,80	
AKF10+ RS485 Modbus 300.06	✓	621878	110,60	
AKF10+ RS485 Modbus 450.06	✓	621885	111,80	



Duct/Immersion sensor with display temp. – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
AKF10+ LCD RS485 Modbus 050.06	✓	663618	155,20	
AKF10+ LCD RS485 Modbus 100.06	✓	663625	156,20	
AKF10+ LCD RS485 Modbus 150.06	✓	663632	157,10	
AKF10+ LCD RS485 Modbus 200.06	✓	663649	157,50	
AKF10+ LCD RS485 Modbus 250.06	✓	663656	158,80	
AKF10+ LCD RS485 Modbus 300.06	✓	663663	159,60	
AKF10+ LCD RS485 Modbus 450.06	✓	663670	160,80	

### Options

Item description	€
Temperature -80..+260 °C (T260 - possible for RS485 Modbus)	10,90

Order example for different items:

**AKF10+ LCD | RS485 Modbus | 450.06 | T260**

**AKF10+** = product

**TRV MultiRange** = output

**450.06** = pocket (length.Ø)

**T260** = temperature

**AKF10+**

Accessories					AS1
Item description	Item no.	On stock	€		
Mounting clip enclosure USE-S pure white	667739	☉	4,60		
Mounting base enclosure USE-S pure white	667722	☉	5,50		
Mounting base enclosure USE-M pure white	668354	☉	7,85		
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	☉	6,30		
Mounting flange MF6 (brass)	3407	☉	6,30		
Syringe thermal contact fluid	102308	☉	1,40		
Mounting bracket with compression fitting for duct sensors Ø=6 mm	670593	☉	12,00		
Bluetooth dongle with micro-USB - communication between USEapp and devices USE-M/USE-L (net price)	668262	☉	29,00		
For cable entries and sealing inserts please refer to chapter "Accessories"					

Accessories - thermowell pockets brass for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
MS-thermowell pocket 50 mm type THMSDS50	50 mm	36 mm	610995	☉	7,85	
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	☉	8,95	
MS-thermowell pocket 150 mm type THMSDS150	150 mm	136 mm	611015	☉	9,45	
MS-thermowell pocket 200 mm type THMSDS200	200 mm	186 mm	611022	☉	9,75	
MS-thermowell pocket 250 mm type THMSDS250	250 mm	236 mm	611985	☉	11,30	
MS-thermowell pocket 300 mm type THMSDS300	300 mm	286 mm	611039	☉	11,60	
MS-thermowell pocket 450 mm type THMSDS450	450 mm	436 mm	611046	☉	11,80	

Accessories - thermowell pockets stainless steel for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
VA-thermowell pocket 50 mm type THVADS50	50 mm	36 mm	611152	☉	17,10	
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	☉	18,90	
VA-thermowell pocket 150 mm type THVADS150	150 mm	136 mm	611824	☉	20,30	
VA-thermowell pocket 200 mm type THVADS200	200 mm	186 mm	611848	☉	21,40	
VA-thermowell pocket 250 mm type THVADS250	250 mm	236 mm	611862	☉	26,60	
VA-thermowell pocket 300 mm type THVADS300	300 mm	286 mm	611879	☉	27,80	
VA-thermowell pocket 450 mm type THVADS450	450 mm	436 mm	611893	☉	28,70	
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	☉	18,20	



AKF10+ LON



KFK01

## KFK01

Passive duct sensor for measurement of air temperature and other gaseous mediums for HVAC applications (e.g. supply and exhaust ducts).

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive sensor
Measuring range temp.	passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	shape J, aluminium
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=6 mm mounting length: 50   100   150   200   250   300   450 mm
Ambient condition	-25..+90 °C
Notes	for mounting up to 260 °C Mounting flange MF6 (brass) is recommended



Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item no.	€
KFK01 PT100 050.06	626446	42,90
KFK01 PT100 100.06	626453	43,80
KFK01 PT100 150.06	626477	45,40
KFK01 PT100 200.06	626484	46,80
KFK01 PT100 250.06	626491	49,40
KFK01 PT100 300.06	626507	51,40
KFK01 PT100 450.06	626514	54,70

Duct/Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item no.	€
KFK01 PT100 1/3 DIN 050.06	626521	46,60
KFK01 PT100 1/3 DIN 100.06	626538	47,50
KFK01 PT100 1/3 DIN 150.06	626545	49,10
KFK01 PT100 1/3 DIN 200.06	626552	50,50
KFK01 PT100 1/3 DIN 250.06	626569	53,20
KFK01 PT100 1/3 DIN 300.06	626576	55,10
KFK01 PT100 1/3 DIN 450.06	626583	58,40

Duct/Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item no.	€
KFK01 PT1000 050.06	626590	45,10
KFK01 PT1000 100.06	626606	46,00
KFK01 PT1000 150.06	626613	47,60
KFK01 PT1000 200.06	626620	49,00
KFK01 PT1000 250.06	626637	51,60
KFK01 PT1000 300.06	626644	53,30
KFK01 PT1000 450.06	626651	56,80

Duct/Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item no.	€
KFK01 PT1000 1/3 DIN 050.06	626675	48,00
KFK01 PT1000 1/3 DIN 100.06	626682	48,90
KFK01 PT1000 1/3 DIN 150.06	626699	50,60
KFK01 PT1000 1/3 DIN 200.06	626705	52,00
KFK01 PT1000 1/3 DIN 250.06	626712	54,60
KFK01 PT1000 1/3 DIN 300.06	626729	56,60
KFK01 PT1000 1/3 DIN 450.06	626736	59,90

## KFK01

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50..+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
KFK01 Ni1000 050.06	626743	44,80
KFK01 Ni1000 100.06	626750	45,70
KFK01 Ni1000 150.06	626767	47,30
KFK01 Ni1000 200.06	626774	48,70
KFK01 Ni1000 250.06	626781	51,30
KFK01 Ni1000 300.06	626798	53,30
KFK01 Ni1000 450.06	626804	56,60

Duct/Immersion sensor -50..+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
KFK01 Ni1000TK5000 050.06	626811	48,30
KFK01 Ni1000TK5000 100.06	626828	49,20
KFK01 Ni1000TK5000 150.06	626835	50,80
KFK01 Ni1000TK5000 200.06	626842	52,20
KFK01 Ni1000TK5000 250.06	626859	54,80
KFK01 Ni1000TK5000 300.06	626866	56,80
KFK01 Ni1000TK5000 450.06	626873	60,10

Duct/Immersion sensor -50..+150 °C – passive NTC10k TP1		
Item description	Item no.	€
KFK01 NTC10k 050.06	626880	41,60
KFK01 NTC10k 100.06	626897	42,50
KFK01 NTC10k 150.06	626903	44,10
KFK01 NTC10k 200.06	626910	45,50
KFK01 NTC10k 250.06	626927	48,20
KFK01 NTC10k 300.06	626934	50,10
KFK01 NTC10k 450.06	626941	53,40

Duct/Immersion sensor -50..+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
KFK01 NTC10k Precon 050.06	626958	41,60
KFK01 NTC10k Precon 100.06	626965	42,50
KFK01 NTC10k Precon 150.06	626972	44,10
KFK01 NTC10k Precon 200.06	626989	45,50
KFK01 NTC10k Precon 250.06	626996	48,20
KFK01 NTC10k Precon 300.06	627009	50,10
KFK01 NTC10k Precon 450.06	627016	53,40

Duct/Immersion sensor -50..+150 °C – passive NTC20k TP1		
Item description	Item no.	€
KFK01 NTC20k 050.06	627023	41,60
KFK01 NTC20k 100.06	627030	42,50
KFK01 NTC20k 150.06	627047	44,10
KFK01 NTC20k 200.06	627054	45,50
KFK01 NTC20k 250.06	627061	48,20
KFK01 NTC20k 300.06	627078	50,10
KFK01 NTC20k 400.06	627085	53,40

Duct/Immersion sensor -50..+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
KFK01 NTC1,8k 050.06	668590	41,60
KFK01 NTC1,8k 100.06	668606	42,50
KFK01 NTC1,8k 150.06	668613	44,10
KFK01 NTC1,8k 200.06	668620	45,50
KFK01 NTC1,8k 250.06	668637	48,20
KFK01 NTC1,8k 300.06	668644	50,10
KFK01 NTC1,8k 450.06	668651	53,40

Duct/Immersion sensor -50..+120 °C – passive LM235Z TP1		
Item description	Item no.	€
KFK01 LM235Z 050.06	627092	43,30
KFK01 LM235Z 100.06	627108	44,20
KFK01 LM235Z 150.06	627115	45,80
KFK01 LM235Z 200.06	627122	47,20
KFK01 LM235Z 250.06	627139	49,90
KFK01 LM235Z 300.06	627146	51,80
KFK01 LM235Z 450.06	627153	55,10

## KFK01

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**KFK01 | FeT | 250.06 | 3-wire | T260**

**KFK01** = product  
**FeT** = sensor  
**250.06** = pocket (length.Ø)  
**3-wire** = number of wires  
**T260** = temperature

Accessories			AS1
Item description	Item no.	On stock	€
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	☉	6,30
Mounting flange MF6 (brass)	3407	☉	6,30

Accessories – thermowell pockets brass for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item no.	On stock	€
MS-thermowell pocket 50 mm type THMSDS50	50 mm	36 mm	610995	☉	7,85
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	☉	8,95
MS-thermowell pocket 150 mm type THMSDS150	150 mm	136 mm	611015	☉	9,45
MS-thermowell pocket 200 mm type THMSDS200	200 mm	186 mm	611022	☉	9,75
MS-thermowell pocket 250 mm type THMSDS250	250 mm	236 mm	611985	☉	11,30
MS-thermowell pocket 300 mm type THMSDS300	300 mm	286 mm	611039	☉	11,60
MS-thermowell pocket 450 mm type THMSDS450	450 mm	436 mm	611046	☉	11,80

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=6 mm					AS2
Item description	Length	Pocket length	Item no.	On stock	€
VA-thermowell pocket 50 mm type THVADS50	50 mm	36 mm	611152	☉	17,10
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	☉	18,90
VA-thermowell pocket 150 mm type THVADS150	150 mm	136 mm	611824	☉	20,30
VA-thermowell pocket 200 mm type THVADS200	200 mm	186 mm	611848	☉	21,40
VA-thermowell pocket 250 mm type THVADS250	250 mm	236 mm	611862	☉	26,60
VA-thermowell pocket 300 mm type THVADS300	300 mm	286 mm	611879	☉	27,80
VA-thermowell pocket 450 mm type THVADS450	450 mm	436 mm	611893	☉	28,70
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	☉	18,20





KFK03



## KFK03

Duct sensor for measurement of air temperature and other gaseous mediums for HVAC applications (e.g. in supply and exhaust ducts).

TECHNICAL DATA	
Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 3 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%)
Power consumption	TRV: max. 1 W (24 V =) TRA: max. 0,5 W (24 V =)
Measuring range temp.	TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV5   TRA5: 0..+250 °C passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	TRV   TRA: ±0,2 °C   ±0,1% of measured value (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=8 mm mounting length: 100   150   200   250 mm
Ambient condition	enclosure passive: -35..+90 °C, max. 85% rH non-condensing enclosure TRV/TRA: -35..+70 °C, max. 85% rH short term condensation
Notes	for other sensors please request

## Highlights

### Stable aluminium-pressure-casting enclosure

Extremely resistant aluminium-pressure-casting enclosure offers reliable air tightness for negative pressure and overpressure conditions.

### SI-Protection

The SI-Protection reliably protects our sensors from humidity and vibrations.

### Acid resistant stainless steel sensor pocket

The acid resistant stainless steel sensor pocket guarantees full functionality – even in aggressive media.

### Technical features

- exchangeable measuring insert
- optional 3 and 4-wire model available
- optional heat-resistant model (up to 260 °C) available

## KFK03

Duct/Immersion sensor -50...+160 °C – passive PT100 TP1		
Item description	Item no.	€
KFK03 PT100 100.08	37877	53,30
KFK03 PT100 150.08	37884	55,20
KFK03 PT100 200.08	37891	57,10
KFK03 PT100 250.08	37907	59,20

Duct/Immersion sensor -50...+160 °C – passive PT1000 TP1		
Item description	Item no.	€
KFK03 PT1000 100.08	37952	55,40
KFK03 PT1000 150.08	37969	57,40
KFK03 PT1000 200.08	37976	59,30
KFK03 PT1000 250.08	37983	61,40

Duct/Immersion sensor -50...+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
KFK03 Ni1000 100.08	39796	55,10
KFK03 Ni1000 150.08	39802	57,10
KFK03 Ni1000 200.08	39819	59,00
KFK03 Ni1000 250.08	39826	61,10

Duct/Immersion sensor -50...+150 °C – passive NTC10k TP1		
Item description	Item no.	€
KFK03 NTC10k 100.08	39918	51,90
KFK03 NTC10k 150.08	39925	53,90
KFK03 NTC10k 200.08	39932	55,80
KFK03 NTC10k 250.08	39949	57,90

Duct/Immersion sensor -50...+150 °C – passive NTC20k TP1		
Item description	Item no.	€
KFK03 NTC20k 100.08	39956	51,90
KFK03 NTC20k 150.08	39963	53,90
KFK03 NTC20k 200.08	39970	55,80
KFK03 NTC20k 250.08	39987	57,90

Duct/Immersion sensor -50...+120 °C – passive LM235Z TP1		
Item description	Item no.	€
KFK03 LM235Z 100.08	40037	54,60
KFK03 LM235Z 150.08	40044	56,50
KFK03 LM235Z 200.08	40051	58,40
KFK03 LM235Z 250.08	40068	60,50

Item description: product | sensor | pocket (length.Ø)

Duct/Immersion sensor -50...+160 °C – passive PT100 1/3 DIN TP1		
Item description	Item no.	€
KFK03 PT100 1/3 DIN 100.08	37914	57,00
KFK03 PT100 1/3 DIN 150.08	37921	59,00
KFK03 PT100 1/3 DIN 200.08	37938	60,90
KFK03 PT100 1/3 DIN 250.08	37945	62,90

Duct/Immersion sensor -50...+160 °C – passive PT1000 1/3 DIN TP1		
Item description	Item no.	€
KFK03 PT1000 1/3 DIN 250.08	39789	63,60
KFK03 PT1000 1/3 DIN 200.08	39772	61,60
KFK03 PT1000 1/3 DIN 150.08	39765	60,40
KFK03 PT1000 1/3 DIN 100.08	37990	58,40

Duct/Immersion sensor -50...+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
KFK03 Ni1000TK5000 100.08	39833	58,60
KFK03 Ni1000TK5000 150.08	39840	60,60
KFK03 Ni1000TK5000 200.08	39857	62,50
KFK03 Ni1000TK5000 250.08	39864	64,60

Duct/Immersion sensor -50...+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
KFK03 NTC10k Precon 100.08	39994	51,90
KFK03 NTC10k Precon 150.08	40006	53,90
KFK03 NTC10k Precon 200.08	40013	55,80
KFK03 NTC10k Precon 250.08	40020	57,90

Duct/Immersion sensor -50...+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
KFK03 NTC1,8k 100.08	325912	51,90
KFK03 NTC1,8k 150.08	349031	53,90
KFK03 NTC1,8k 200.08	298803	55,80
KFK03 NTC1,8k 250.08	314329	57,90

## KFK03

### Options

Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Item description: product | TRVx/TRAx | pocket (length.Ø)

Duct/Immersion sensor -50..+50 °C – active 0..10 V TP1		
Item description	Item no.	€
KFK03 TRV1 100.08	350983	129,20
KFK03 TRV1 150.08	351010	130,50
KFK03 TRV1 200.08	277860	131,90
KFK03 TRV1 250.08	286879	133,30

Duct/Immersion sensor -10..+120 °C – active 0..10 V TP1		
Item description	Item no.	€
KFK03 TRV2 100.08	332453	129,20
KFK03 TRV2 150.08	326711	130,50
KFK03 TRV2 200.08	351096	131,90
KFK03 TRV2 250.08	347242	133,30

Duct/Immersion sensor 0..+50 °C – active 0..10 V TP1		
Item description	Item no.	€
KFK03 TRV3 100.08	272315	129,20
KFK03 TRV3 150.08	351027	130,50
KFK03 TRV3 200.08	284905	131,90
KFK03 TRV3 250.08	285094	133,30

Duct/Immersion sensor 0..+160 °C – active 0..10 V TP1		
Item description	Item no.	€
KFK03 TRV4 100.08	351003	129,20
KFK03 TRV4 150.08	261418	130,50
KFK03 TRV4 200.08	351102	131,90
KFK03 TRV4 250.08	347969	133,30

Duct/Immersion sensor 0..+250 °C – active 0..10 V TP1		
Item description	Item no.	€
KFK03 TRV5 100.08	350990	136,80
KFK03 TRV5 150.08	309127	138,20
KFK03 TRV5 200.08	351119	139,50
KFK03 TRV5 250.08	276214	140,90

Duct/Immersion sensor -50..+50 °C – active 4..20 mA TP1		
Item description	Item no.	€
KFK03 TRA1 100.08	152464	129,20
KFK03 TRA1 150.08	165334	130,50
KFK03 TRA1 200.08	232166	131,90
KFK03 TRA1 250.08	204668	133,30

Duct/Immersion sensor -10..+120 °C – active 4..20 mA TP1		
Item description	Item no.	€
KFK03 TRA2 100.08	242639	129,20
KFK03 TRA2 150.08	351034	130,50
KFK03 TRA2 200.08	351041	131,90
KFK03 TRA2 250.08	351133	133,30

## KFK03

Duct/Immersion sensor 0..+50 °C – active 4..20 mA			TP1
Item description	Item no.	€	
KFK03 TRA3 100.08	338585	129,20	
KFK03 TRA3 150.08	170239	130,50	
KFK03 TRA3 200.08	161909	131,90	
KFK03 TRA3 250.08	134804	133,30	

Duct/Immersion sensor 0..+160 °C – active 4..20 mA			TP1
Item description	Item no.	€	
KFK03 TRA4 100.08	315920	129,20	
KFK03 TRA4 150.08	338981	130,50	
KFK03 TRA4 200.08	337380	131,90	
KFK03 TRA4 250.08	303057	133,30	

Duct/Immersion sensor 0..+250 °C – active 4..20 mA			TP1
Item description	Item no.	€	
KFK03 TRA5 100.08	239080	136,80	
KFK03 TRA5 150.08	320948	138,20	
KFK03 TRA5 200.08	240116	139,50	
KFK03 TRA5 250.08	281577	140,90	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting flange MF8 (VA)	103305	⊕	18,80	

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=8 mm					AS2
Item description	Length	Item no.	On stock	€	
VA thermowell pocket 100 mm type THVA100 (KFK03)	100 mm	584180	⊕	27,00	
VA thermowell pocket 150 mm type THVA150 (KFK03)	150 mm	584197	⊕	28,30	
VA thermowell pocket 200 mm type THVA200 (KFK03)	200 mm	584203	⊕	29,90	
VA thermowell pocket 250 mm type THVA250 (KFK03)	250 mm	594738	⊕	31,40	



RG03

## RG03

Duct sensor (high temperature) for temperature measurement of liquids in duct applications for heating, ventilation and air-conditioning. Also suitable for exhaust systems.

TECHNICAL DATA	
Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 3 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	15..24 V = (±10%)
Power consumption	TRV: max. 1 W (24 V =) TRA: max. 0,5 W (24 V =)
Measuring range temp.	TRV6   TRA6: 0..+400 °C TRV7   TRA7: 0..+600 °C passive: depending on used sensor
Working range temp.	0..+500 °C temporarily up to +600 °C
Accuracy temperature	TRV   TRA: ±0,2 °C   ±0,1% of measured value (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	PT100, 3-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=11 mm mounting length: 250   500 mm
Ambient condition	enclosure passive: -25..+90 °C, max. 85% rH short term condensation enclosure TRV/TRA: -25..+70 °C, max. 85% rH short term condensation
Delivery contents	incl. mounting flange

**RG03**

Item description: product | sensor | pocket (length.Ø)

<b>Duct/Immersion sensor 0..+600 °C – passive PT100/PT1000</b>			TP1
Item description	Item no.	€	
RG03 PT100 250.11	64361	106,80	
RG03 PT100 500.11	64378	109,30	
RG03 PT1000 250.11	64385	106,80	
RG03 PT1000 500.11	64392	109,30	

Item description: product | TRV/TRA | pocket (length.Ø)

<b>Duct/Immersion sensor 0..+400 °C – active 0..10 V   4..20 mA</b>			TP1
Item description	Item no.	€	
RG03 TRV6 250.11	261982	198,70	
RG03 TRV6 500.11	240789	201,10	
RG03 TRA6 250.11	177405	198,70	
RG03 TRA6 500.11	143936	201,10	

<b>Duct/Immersion sensor 0..+600 °C – active 0..10 V   4..20 mA</b>			TP1
Item description	Item no.	€	
RG03 TRV7 250.11	64408	198,70	
RG03 TRV7 500.11	242127	201,10	
RG03 TRA7 250.11	64422	198,70	
RG03 TRA7 500.11	78283	201,10	



MWF+ passive / TRV / TRA



MWF+ passive (NTCxx)



MWF+ LCD

## MWF+

Duct averaging temperature sensor in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus) for measuring the average temperature in air ducts. The sensor detects the applied temperature value throughout the entire length (with NTC selectively). Mounting angles for uncomplicated duct mounting are included in delivery. A spring at the connection head reduces vibrations.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V, LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp), min. load 5 k $\Omega$
Network technology	RS485 Modbus
Output Amp	TRA: 1x 4..20 mA, max. load 500 $\Omega$
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Power supply	24 V = or 24 V ~ ( $\pm 20\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 $^{\circ}\text{C}$ default setting: -20..+80 $^{\circ}\text{C}$ RS485 Modbus: -20..+120 $^{\circ}\text{C}$ LCD/relay: optionally configured via Thermokon USEapp passive: -50..+80 $^{\circ}\text{C}$ passive (NTCxx): 0..+50 $^{\circ}\text{C}$
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 $^{\circ}\text{C}$ ) PT1000: class B Ni1000/Ni1000TK5000: $\pm 0,4$ K (typ. at 0 $^{\circ}\text{C}$ )
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. $\varnothing=8$ mm RS485 Modbus: M20 for wire max. $\varnothing=8$ mm seal insert for double cable entry for wire max $\varnothing=6$ mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Sensor rod	3000 mm, 6000 mm
Ambient condition	enclosure passive: -35..+90 $^{\circ}\text{C}$ , max. 85% rH short term condensation enclosure active/BUS: -35..+70 $^{\circ}\text{C}$ , max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white LCD/BUS/relay: incl. mounting flange MF6DS flexible incl. installation set



**MWF+**

Item description: product | sensor | cable length (L)

Duct averaging sensor temperature – passive			TP1
Item description	Item no.	€	
MWF+ PT1000 L3000 incl. installation kit	620413	79,80	
MWF+ PT1000 L6000 incl. installation kit	620420	88,80	
MWF+ Ni1000 L3000 incl. installation kit	620437	79,80	
MWF+ Ni1000 L6000 incl. installation kit	620444	88,80	
MWF+ Ni1000TK5000 L3000 incl. installation kit	675888	79,80	
MWF+ Ni1000TK5000 L6000 incl. installation kit	674324	88,80	
MWF+ NTC10k L3000 incl. installation kit	670128	110,00	
MWF+ NTC10k L6000 incl. installation kit	670135	125,00	
MWF+ NTC10k Precon L3000 incl. installation kit	670142	110,00	
MWF+ NTC10k Precon L6000 incl. installation kit	670159	125,00	
MWF+ NTC20k L3000 incl. installation kit	670166	110,00	
MWF+ NTC20k L6000 incl. installation kit	670173	125,00	

Item description: product | TRV/TRA MultiRange | cable length (L)

Duct averaging sensor temperature – active 0..10 V   4..20 mA   relay			TP1
Item description	USEapp	Item no.	€
MWF+ TRV MultiRange L3000 incl. installation kit		620475	132,70
MWF+ TRV MultiRange L6000 incl. installation kit		620482	140,90
MWF+ TRA MultiRange L3000 incl. installation kit		620499	132,70
MWF+ TRA MultiRange L6000 incl. installation kit		620505	140,90
MWF+ TRV MultiRange relay L3000 incl. installation kit	✓	662758	171,70
MWF+ TRV MultiRange relay L6000 incl. installation kit	✓	662765	179,90

Duct averaging sensor with display temperature – active 0..10 V   4..20 mA   relay			TP1
Item description	USEapp	Item no.	€
MWF+ LCD TRV MultiRange L3000 incl. installation kit	✓	662772	172,40
MWF+ LCD TRV MultiRange L6000 incl. installation kit	✓	662789	180,60
MWF+ LCD TRA MultiRange L3000 incl. installation kit	✓	662796	172,40
MWF+ LCD TRA MultiRange L6000 incl. installation kit	✓	662802	180,60
MWF+ LCD TRV MultiRange relay L3000 incl. installation kit	✓	662819	201,70
MWF+ LCD TRV MultiRange relay L6000 incl. installation kit	✓	662826	209,90



Item description: product | BUS | cable length (L)

## MWF+



Duct averaging sensor temperature – active BUS				TP1
Item description	USEapp	Item no.	€	
MWF+ RS485 Modbus L3000 incl. installation kit	✓	662833	174,70	
MWF+ RS485 Modbus L6000 incl. installation kit	✓	662840	182,90	

Duct averaging sensor with display temperature – active BUS				TP1
Item description	USEapp	Item no.	€	
MWF+ LCD RS485 Modbus L3000 incl. installation kit	✓	662857	223,70	
MWF+ LCD RS485 Modbus L6000 incl. installation kit	✓	662864	231,90	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-S pure white	667722	⊕	5,50	
Mounting base enclosure USE-M pure white	668354	⊕	7,85	
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	⊕	6,30	
Mounting flange MF7 (brass)	102360	⊕	6,30	
Installation set TFR/MWF	458399	⊕	8,40	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊕	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"



MWF400+



## MWF400+



Duct averaging temperature sensor with flexible sensor rod in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus) for measuring the average temperature in air ducts.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V, LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp), min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: -20..+80 °C RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: -30..+80 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm RS485 Modbus: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Sensor rod	copper, Ø=4 mm mounting length 400 mm Sensor neck: stainless steel V4A, Ø=6 mm
Ambient condition	enclosure passive: -35..+90 °C max. 85% rH short term condensation enclosure active/BUS: -35..+70 °C, max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white LCD/BUS/relay: incl. mounting flange MF6DS flexible

## MWF400+

Item description: product | sensor

Duct averaging sensor temperature – passive			TP1
Item description	Item no.	€	
MWF400+ PT100	654166	69,80	
MWF400+ PT1000	660518	69,80	
MWF400+ Ni1000	641395	69,80	
MWF400+ Ni1000TK5000	641425	69,80	
MWF400+ NTC10k	641449	68,00	

Item description: product | TRV/TRA MultiRange

Duct averaging sensor (opt. with display) temperature – active 0..10 V   4..20 mA   relay			TP1
Item description	USEapp	Item no.	€
MWF400+ TRV MultiRange		642088	122,70
MWF400+ TRA MultiRange		642095	122,70
MWF400+ TRV MultiRange relay	✓	662871	161,70
MWF400+ LCD TRV MultiRange	✓	662925	162,40
MWF400+ LCD TRA MultiRange	✓	662956	162,40
MWF400+ LCD TRV MultiRange relay	✓	662963	191,70

Item description: product | BUS



Duct averaging sensor (opt. with display) temperature – active BUS			TP1
Item description	USEapp	Item no.	€
MWF400+ RS485 Modbus	✓	662970	203,70
MWF400+ LCD RS485 Modbus	✓	662987	252,70

Accessories			AS1
Item description	Item no.	On stock	€
Mounting base enclosure USE-S pure white	667722	⊖	5,50
Mounting base enclosure USE-M pure white	668354	⊖	7,85
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	⊖	6,30
Mounting flange MF7 (brass)	102360	⊖	6,30
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00
For cable entries and sealing inserts please refer to chapter "Accessories"			



TFR+  
manual reset

### TFR+

The frost protection thermostat TFR is used for downstream temperature monitoring of water air heaters in ventilation and air-conditioning systems to prevent frost damages. It has a small differential gap and a high reproducibility. The reset can be done automatically or manually in case of type 'R'. The frost protection thermostat can be used to initiate the following frost protection functions: stop fan, close outside air dampers, open heating coil valve 100%, star heating coil pump, switch-off chiller (condenser) and humidifier, trigger visual and/or audible frost alarm. Replaces TFR in the newly developed enclosure USE-L.

#### TECHNICAL DATA

Measuring values	temperature
Medium	air
Output switch contact	single pole change over switching capacity max. 10 A (250 V ~)
Accuracy temperature	repeatability ±0,5 °C
Set point range	-10..+12 °C (default +5 °C)
Switching values	switching differential: 2 °C ±1 °C
Enclosure	enclosure USE-L PC, pure white
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Capillary pipe	copper with tube filling R507 length 1,8   3   6   12 m sensor operating length approx. 600 mm contact material Ag/Ni (90%/10%) gold plated (3 µm)
Ambient condition	-35..+70 °C max. 85% rH short term condensation
Delivery contents	Installation set TFR/MWF with PA6 GF30 (6 pcs)

Item description: product | length capillary pipe

Frost protection thermostat – automatical reset				TP1
Item description	Item no.	On stock	€	
TFR+ 1800 incl. mounting angle	667265	⊕	76,10	
TFR+ 3000 incl. mounting angle	667272	⊕	71,90	
TFR+ 6000 TFR+ 3000 incl. mounting angle	667289	⊕	74,50	
TFR+ 12000 incl. mounting angle	667296	⊕	86,90	

## TFR+

Item description: product | length capillary pipe

Frost protection thermostat – manual reset				TP1
Item description	Item no.	On stock		€
TFR+ 1800 -R incl. mounting angle	668200			91,10
TFR+ 3000 -R incl. mounting angle	668217	⊖		89,40
TFR+ 6000 -R incl. mounting angle	668231	⊖		92,00

Accessories				AS1
Item description	Item no.	On stock		€
Mounting base enclosure USE-L pure white	668361	⊖		11,00
Mounting flange MF2 (for frost protection thermostats)	435642	⊖		6,30
Installation set TFR/MWF	458399	⊖		8,40



TFRe

## TFRe

Electronic frost protection thermostat for temperature monitoring of air/hot water heat exchangers to prevent damage to the ventilation system. The temperature measurement is typically carried out by a fast-response sensor in the outlet of the heat exchanger. When the set limit value is exceeded, the TFRe overrides the original control signal of the heating valve to a larger valve opening in order to prevent freezing. If the temperature drops further, the fan is stopped for system protection and the control unit gets an alert. For temperature detection in the water outlet of the heat exchanger a fast-response sensor (e.g. TF14 with KL4VA) should be used (not in delivery).

### TECHNICAL DATA

Measuring values	temperature
Output voltage	2x 0..10 V temperature, actuating variable valve drive
Output switch contact	Fan: floating contact NO, 250 V ~ / 6 A Alarm: floating contact NO, 30 V ~ / 1 A
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 2 VA (24 V ~)
Measuring range temp.	-10..+120 °C
Accuracy temperature	±1 K (typ. at 0 °C)
Inputs	for passive sensor NTC10K (default), PT1000, Ni1000, Ni1000TK5000, adjustable for external controller defining control value for valve for fan (floating contact)
Functions	frost protection function controlling valve actuator, alarm
Display	LED green – indicator valve actuator LED red – alarm LED yellow – fan
Enclosure	ABS, white
Protection	IP20 according to EN 60529
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Ambient condition	-40..+70 °C, max. 85% rH non-condensing
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

### Electronic frost protection thermostat

TP1

Item description	Item no.	€
TFRe	667203	148,00



SFK02+



SFK02 LON

## SFK02+

Immersion sensor with hinged lid enclosure USE. Complete and integrated thermowell pocket for temperature measurement of gases and liquids in pipework applications. Replaces SFK02 in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus; LON: enclosure PA6, pure white, with quick lock screws).

### TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp)
Network technology	LON FT (free topology), RS485 Modbus
Output Amp	TRA: 1x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Power supply	24 V = or 24 V ~ (±20%), TRA: 15..24 V = (±10%) LON: 15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C, default setting: 0..+160 °C, LON: -45..+130 °C, RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Display	LCD 29x35 mm with RGB backlight (optional)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. Ø=8 mm, BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm, removable (only enclosure USE)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50   100   150   200   250   450 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure: -35..+70 °C enclosure passive: -35..+90 °C max. 85% rH short term condensation
Notes	for other sensors please request



## SFK02+

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50...+160 °C – passive PT100 TP2		
Item description	Item no.	€
SFK02+ PT100 050.08	622295	41,30
SFK02+ PT100 100.08	622301	42,10
SFK02+ PT100 150.08	622318	43,70
SFK02+ PT100 200.08	622325	45,80
SFK02+ PT100 250.08	622332	47,20
SFK02+ PT100 450.08	622349	49,80

Immersion sensor -50...+160 °C – passive PT100 1/3 DIN TP2		
Item description	Item no.	€
SFK02+ PT100 1/3 DIN 050.08	622356	45,00
SFK02+ PT100 1/3 DIN 100.08	622363	45,80
SFK02+ PT100 1/3 DIN 150.08	622370	47,40
SFK02+ PT100 1/3 DIN 200.08	622387	49,50
SFK02+ PT100 1/3 DIN 250.08	622394	50,90
SFK02+ PT100 1/3 DIN 450.08	622400	53,50

Immersion sensor -50...+160 °C – passive PT1000 TP2		
Item description	Item no.	€
SFK02+ PT1000 050.08	622417	43,40
SFK02+ PT1000 100.08	622424	44,20
SFK02+ PT1000 150.08	622431	45,90
SFK02+ PT1000 200.08	622448	48,10
SFK02+ PT1000 250.08	622455	49,40
SFK02+ PT1000 450.08	622462	52,00

Immersion sensor -50...+160 °C – passive PT1000 1/3 DIN TP2		
Item description	Item no.	€
SFK02+ PT1000 1/3 DIN 050.08	621946	46,40
SFK02+ PT1000 1/3 DIN 100.08	621953	47,30
SFK02+ PT1000 1/3 DIN 150.08	621960	48,90
SFK02+ PT1000 1/3 DIN 200.08	621977	51,00
SFK02+ PT1000 1/3 DIN 250.08	621984	52,40
SFK02+ PT1000 1/3 DIN 450.08	621991	55,00

Immersion sensor -50...+160 °C – passive Ni1000 TP2		
Item description	Item no.	€
SFK02+ Ni1000 050.08	622080	43,20
SFK02+ Ni1000 100.08	622097	44,00
SFK02+ Ni1000 150.08	622103	45,60
SFK02+ Ni1000 200.08	622110	47,80
SFK02+ Ni1000 250.08	622127	49,10
SFK02+ Ni1000 450.08	622141	51,70

Immersion sensor -50...+160 °C – passive Ni1000TK5000 TP2		
Item description	Item no.	€
SFK02+ Ni1000TK5000 050.08	622158	46,60
SFK02+ Ni1000TK5000 100.08	622165	47,50
SFK02+ Ni1000TK5000 150.08	622189	49,10
SFK02+ Ni1000TK5000 200.08	622196	51,30
SFK02+ Ni1000TK5000 250.08	622202	52,60
SFK02+ Ni1000TK5000 450.08	622219	55,20

Immersion sensor -50...+150 °C – passive NTC10k TP2		
Item description	Item no.	€
SFK02+ NTC10k 050.08	622004	40,00
SFK02+ NTC10k 100.08	622011	40,80
SFK02+ NTC10k 150.08	622028	42,40
SFK02+ NTC10k 200.08	622035	44,60
SFK02+ NTC10k 250.08	622042	45,90
SFK02+ NTC10k 450.08	622059	48,50

Immersion sensor -50...+150 °C – passive NTC10k Precon TP2		
Item description	Item no.	€
SFK02+ NTC10k Precon 050.08	622479	40,00
SFK02+ NTC10k Precon 100.08	622486	40,80
SFK02+ NTC10k Precon 150.08	622493	42,40
SFK02+ NTC10k Precon 200.08	622509	44,60
SFK02+ NTC10k Precon 250.08	622516	45,90
SFK02+ NTC10k Precon 450.08	622523	48,50

Immersion sensor -50...+150 °C – passive NTC20k TP2		
Item description	Item no.	€
SFK02+ NTC20k 050.08	622530	40,00
SFK02+ NTC20k 100.08	622547	40,80
SFK02+ NTC20k 150.08	622554	42,40
SFK02+ NTC20k 200.08	622561	44,60
SFK02+ NTC20k 250.08	622578	45,90
SFK02+ NTC20k 450.08	622585	48,50

Immersion sensor -50...+150 °C – passive NTC1,8k TP2		
Item description	Item no.	€
SFK02+ NTC1,8k 050.08	668668	40,00
SFK02+ NTC1,8k 100.08	668675	40,80
SFK02+ NTC1,8k 150.08	668682	42,40
SFK02+ NTC1,8k 200.08	668699	44,60
SFK02+ NTC1,8k 250.08	668705	45,90
SFK02+ NTC1,8k 450.08	668712	48,50



## SFK02+

Immersion sensor -50..+120 °C – passive LM235Z TP2		
Item description	Item no.	€
SFK02+ LM235Z 050.08	622226	41,70
SFK02+ LM235Z 100.08	622233	42,50
SFK02+ LM235Z 150.08	622240	44,20
SFK02+ LM235Z 200.08	622257	46,40
SFK02+ LM235Z 250.08	622264	47,70
SFK02+ LM235Z 450.08	622288	50,30

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25
Price reduction to PT100 for sensor KTY81-110   KTY81-121   KTY81-122   KTY81-210	-3,40

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V TP2		
Item description	Item no.	€
SFK02+ TRV MultiRange 050.08	622592	85,50
SFK02+ TRV MultiRange 100.08	622608	86,10
SFK02+ TRV MultiRange 150.08	622615	87,40
SFK02+ TRV MultiRange 200.08	622622	89,10
SFK02+ TRV MultiRange 250.08	622639	90,10
SFK02+ TRV MultiRange 450.08	622646	92,10

Immersion sensor with display temperature – active 0..10 V TP2			
Item description	USEapp	Item no.	€
SFK02+ LCD TRV MultiRange 050.08	✓	665476	125,20
SFK02+ LCD TRV MultiRange 100.08	✓	665483	125,80
SFK02+ LCD TRV MultiRange 150.08	✓	665490	127,10
SFK02+ LCD TRV MultiRange 200.08	✓	665506	128,80
SFK02+ LCD TRV MultiRange 250.08	✓	665513	129,80
SFK02+ LCD TRV MultiRange 450.08	✓	665520	131,80

Immersion sensor temperature – active 4..20 mA TP2		
Item description	Item no.	€
SFK02+ TRA MultiRange 050.08	622653	85,50
SFK02+ TRA MultiRange 100.08	622660	86,10
SFK02+ TRA MultiRange 150.08	622677	87,40
SFK02+ TRA MultiRange 200.08	622684	89,10
SFK02+ TRA MultiRange 250.08	622691	90,10
SFK02+ TRA MultiRange 450.08	622707	92,10

**SFK02+**

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor with display temperature – active 4..20 mA			TP2
Item description	USEapp	Item no.	€
SFK02+ LCD TRA MultiRange 050.08	✓	665681	125,20
SFK02+ LCD TRA MultiRange 100.08	✓	665698	125,80
SFK02+ LCD TRA MultiRange 150.08	✓	665704	127,10
SFK02+ LCD TRA MultiRange 200.08	✓	665711	128,80
SFK02+ LCD TRA MultiRange 250.08	✓	665728	129,80
SFK02+ LCD TRA MultiRange 450.08	✓	665735	131,80

Item description: product | TRV/TRA MultiRange | relay | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V + relay			TP2
Item description	USEapp	Item no.	€
SFK02+ TRV MultiRange relay 050.08	✓	665568	115,20
SFK02+ TRV MultiRange relay 100.08	✓	665575	115,80
SFK02+ TRV MultiRange relay 150.08	✓	665582	117,10
SFK02+ TRV MultiRange relay 200.08	✓	665599	118,80
SFK02+ TRV MultiRange relay 250.08	✓	665605	119,80
SFK02+ TRV MultiRange relay 450.08	✓	665612	121,80

Immersion sensor with display temperature – active 0..10 V + relay			TP2
Item description	USEapp	Item no.	€
SFK02+ LCD TRV MultiRange relay 050.08	✓	665629	145,20
SFK02+ LCD TRV MultiRange relay 100.08	✓	665636	145,80
SFK02+ LCD TRV MultiRange relay 150.08	✓	665643	147,10
SFK02+ LCD TRV MultiRange relay 200.08	✓	665650	148,80
SFK02+ LCD TRV MultiRange relay 250.08	✓	665667	149,80
SFK02+ LCD TRV MultiRange relay 450.08	✓	665674	151,80

Options	
Item description	€
TRV/TRA: Temperature -80..+260 °C (T260)	10,90

Order example for different items:

**SFK02+ LCD | TRV MultiRange | 450.08 | T260**

- SFK02+ LCD** = product
- TRV MultiRange** = output
- 450.08** = pocket (length.Ø)
- T260** = temperature

Item description: product | BUS | pocket (length.Ø)

## SFK02+



Immersion sensor temperature – active LON			TP1
Item description	Item no.	€	
SFK02 LON 050.08	95181	195,30	
SFK02 LON 100.08	95198	196,10	
SFK02 LON 150.08	95204	197,80	
SFK02 LON 200.08	95211	200,00	
SFK02 LON 250.08	95228	201,30	
SFK02 LON 450.08	95235	203,90	



Immersion sensor temperature – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
SFK02+ RS485 Modbus 050.08	✓	665742	118,20	
SFK02+ RS485 Modbus 100.08	✓	665759	118,80	
SFK02+ RS485 Modbus 150.08	✓	665766	120,10	
SFK02+ RS485 Modbus 200.08	✓	665773	121,80	
SFK02+ RS485 Modbus 250.08	✓	665780	122,80	
SFK02+ RS485 Modbus 450.08	✓	665797	124,80	



Immersion sensor with display temperature – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
SFK02+ LCD RS485 Modbus 050.08	✓	665803	167,20	
SFK02+ LCD RS485 Modbus 100.08	✓	665810	167,80	
SFK02+ LCD RS485 Modbus 150.08	✓	665827	169,10	
SFK02+ LCD RS485 Modbus 200.08	✓	665834	170,80	
SFK02+ LCD RS485 Modbus 250.08	✓	665841	171,80	
SFK02+ LCD RS485 Modbus 450.08	✓	665858	173,80	

Replacement articles – mounting accessories USE				AS1
Item description	Item no.	On stock	€	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00	
For cable entries and sealing inserts please refer to chapter "Accessories"				

Accessories – bonded pockets						AS1
Item description	Length	Pocket length	Item no.	On stock	€	
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊖	44,85	
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊖	51,40	
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊖	57,90	
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊖	63,70	



SFK02+ FR



## SFK02+ FR



Immersion sensor with hinged lid enclosure USE pocket  $\varnothing=4$  mm for faster response. Complete and integrated thermowell pocket for temperature measurement of gases and liquids in pipework applications.

### TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp)
Output Amp	TRA: 1x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ ( $\pm 20\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: 0..+160 °C RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: -50..+150 +160 +260 °C, depending on used sensor
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white with removable cable entry
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. $\varnothing=8$ mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pocket	stainless steel V4A, $\varnothing=6$ mm, end of sensor $\varnothing=4$ mm 50 mm: $\varnothing=4$ mm thread R 1/2" mounting length: 50   100   200 mm
Ambient condition	-50..+160   +150 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure: -35..+70 °C enclosure passive: -35..+90 °C max. 85% rH short term condensation
Notes	for other sensors please request

## SFK02+ FR

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100 TP2		
Item description	Item no.	€
SFK02+ FR PT100 050.04	665926	44,30
SFK02+ FR PT100 100.06/04	665933	45,10
SFK02+ FR PT100 200.06/04	665940	48,80

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN TP2		
Item description	Item no.	€
SFK02+ FR PT100 1/3 DIN 050.04	665957	48,00
SFK02+ FR PT100 1/3 DIN 100.06/04	665964	48,80
SFK02+ FR PT100 1/3 DIN 200.06/04	665971	52,50

Immersion sensor -50..+160 °C – passive PT1000 TP2		
Item description	Item no.	€
SFK02+ FR PT1000 050.04	655583	46,40
SFK02+ FR PT1000 100.06/04	638807	47,20
SFK02+ FR PT1000 200.06/04	640749	51,10

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN TP2		
Item description	Item no.	€
SFK02+ FR PT1000 1/3 DIN 050.04	665988	49,40
SFK02+ FR PT1000 1/3 DIN 100.06/04	665995	50,30
SFK02+ FR PT1000 1/3 DIN 200.06/04	666008	54,00

Immersion sensor -50..+160 °C – passive Ni1000 TP2		
Item description	Item no.	€
SFK02+ FR Ni1000 050.04	666015	46,20
SFK02+ FR Ni1000 100.06/04	657280	47,00
SFK02+ FR Ni1000 200.06/04	666022	50,80

Immersion sensor -50..+160 °C – passive Ni1000TK5000 TP2		
Item description	Item no.	€
SFK02+ FR Ni1000TK5000 050.04	655590	49,60
SFK02+ FR Ni1000TK5000 100.06/04	640732	50,50
SFK02+ FR Ni1000TK5000 200.06/04	640770	54,30

Immersion sensor -50..+150 °C – passive NTC10k TP2		
Item description	Item no.	€
SFK02+ FR NTC10k 050.04	655545	43,00
SFK02+ FR NTC10k 100.06/04	640725	43,80
SFK02+ FR NTC10k 200.06/04	640763	47,60

Immersion sensor -50..+150 °C – passive NTC10k Precon TP2		
Item description	Item no.	€
SFK02+ FR NTC10k Precon 050.04	666053	43,00
SFK02+ FR NTC10k Precon 100.06/04	666060	43,80
SFK02+ FR NTC10k Precon 200.06/04	666077	47,60

Immersion sensor -50..+150 °C – passive NTC20k TP2		
Item description	Item no.	€
SFK02+ FR NTC20k 050.04	655552	43,00
SFK02+ FR NTC20k 100.06/04	645690	43,80
SFK02+ FR NTC20k 200.06/04	655576	47,60

Immersion sensor -50..+150 °C – passive NTC1,8k TP2		
Item description	Item no.	€
SFK02+ FR NTC1,8k 050.04	655538	43,00
SFK02+ FR NTC1,8k 100.06/04	640718	43,80
SFK02+ FR NTC1,8k 200.06/04	640756	47,60

**SFK02+ FR**

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V			TP2
Item description	Item no.	€	
SFK02+ FR TRV MultiRange 050.04	655620	88,50	
SFK02+ FR TRV MultiRange 100.06/04	645881	89,10	
SFK02+ FR TRV MultiRange 200.06/04	655637	92,10	

Immersion sensor with display temperature – active 0..10 V			TP2
Item description	USEapp	Item no.	€
SFK02+ FR LCD TRV MultiRange 050.04	✓	666091	137,50
SFK02+ FR LCD TRV MultiRange 100.06/04	✓	666107	138,10
SFK02+ FR LCD TRV MultiRange 200.06/04	✓	666114	141,10

Immersion sensor temperature – active 4..20 mA			TP2
Item description	Item no.	€	
SFK02+ FR TRA MultiRange 050.04	655606	88,50	
SFK02+ FR TRA MultiRange 100.06/04	645867	89,10	
SFK02+ FR TRA MultiRange 200.06/04	655613	92,10	

Immersion sensor with display temperature – active 4..20 mA			TP2
Item description	USEapp	Item no.	€
SFK02+ FR LCD TRA MultiRange 050.04	✓	666121	137,50
SFK02+ FR LCD TRA MultiRange 100.06/04	✓	666138	138,10
SFK02+ FR LCD TRA MultiRange 200.06/04	✓	666145	141,10

Item description: product | TRV/TRA MultiRange | relay | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V + relay			TP2
Item description	USEapp	Item no.	€
SFK02+ FR TRV MultiRange relay 050.04	✓	666169	127,50
SFK02+ FR TRV MultiRange relay 100.06/04	✓	666176	128,10
SFK02+ FR TRV MultiRange relay 200.06/04	✓	666183	131,10

Immersion sensor with display temperature – active 0..10 V + relay			TP2
Item description	USEapp	Item no.	€
SFK02+ FR LCD TRV MultiRange relay 050.04	✓	666190	157,50
SFK02+ FR LCD TRV MultiRange relay 100.06/04	✓	666206	158,10
SFK02+ FR LCD TRV MultiRange relay 200.06/04	✓	666213	161,10

Item description: product | BUS | pocket (length.Ø)

## SFK02+ FR



Immersion sensor temperature – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
SFK02+ FR RS485 Modbus 050.04	✓	666220	130,50	
SFK02+ FR RS485 Modbus 100.06/04	✓	666237	131,10	
SFK02+ FR RS485 Modbus 200.06/04	✓	666244	134,10	



Immersion sensor with display temperature – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
SFK02+ FR LCD RS485 Modbus 050.04	✓	666251	179,50	
SFK02+ FR LCD RS485 Modbus 100.06/04	✓	666268	180,10	
SFK02+ FR LCD RS485 Modbus 200.06/04	✓	666275	183,10	

Accessories				AS1
Item description	Item no.	On stock	€	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00	



SFKH02+



SFKH02 LON

## SFKH02+

Immersion sensor with neck pipe in hinged lid enclosure USE complete and integrated thermowell pocket for temperature measurement of gases and liquids in pipework applications. Replaces SFKH02 in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus; LON: enclosure PA6, pure white, with quick lock screws).

### TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp)
Output Amp	TRA: 1x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) TRA: 15..24 V = (±10%) LON: 15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: 0..+160 °C, LON: -45..+130 °C, RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm removable (only enclosure USE)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>





## SFKH02+

	LON: terminal block, max. 1,5 mm <sup>2</sup>
Neck pipe	stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50   100   150   200   250   450 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure: -35..+70 °C enclosure passive: -35..+90 °C max. 85% rH short term condensation
Notes	for other sensors please request

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item no.	€
SFKH02+ PT100 050.08	623537	60,20
SFKH02+ PT100 100.08	623544	61,00
SFKH02+ PT100 150.08	623551	62,70
SFKH02+ PT100 200.08	623568	64,90
SFKH02+ PT100 250.08	623575	66,20
SFKH02+ PT100 450.08	623582	68,80

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item no.	€
SFKH02+ PT100 1/3 DIN 050.08	623599	64,00
SFKH02+ PT100 1/3 DIN 100.08	623605	64,80
SFKH02+ PT100 1/3 DIN 150.08	623612	66,40
SFKH02+ PT100 1/3 DIN 200.08	623629	68,70
SFKH02+ PT100 1/3 DIN 250.08	623636	69,90
SFKH02+ PT100 1/3 DIN 450.08	623643	72,50

Immersion sensor -50..+160 °C – passive PT1000		TP1
Item description	Item no.	€
SFKH02+ PT1000 050.08	623650	62,40
SFKH02+ PT1000 100.08	623667	63,30
SFKH02+ PT1000 150.08	623674	64,90
SFKH02+ PT1000 200.08	623681	67,10
SFKH02+ PT1000 250.08	623698	68,40
SFKH02+ PT1000 450.08	623704	71,00

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN		TP1
Item description	Item no.	€
SFKH02+ PT1000 1/3 DIN 050.08	623223	65,40
SFKH02+ PT1000 1/3 DIN 100.08	623230	66,20
SFKH02+ PT1000 1/3 DIN 150.08	623247	67,90
SFKH02+ PT1000 1/3 DIN 200.08	623254	70,10
SFKH02+ PT1000 1/3 DIN 250.08	623261	71,40
SFKH02+ PT1000 1/3 DIN 450.08	623278	74,00

Immersion sensor -50..+160 °C – passive Ni1000		TP1
Item description	Item no.	€
SFKH02+ Ni1000 050.08	623353	62,20
SFKH02+ Ni1000 100.08	623360	63,00
SFKH02+ Ni1000 150.08	623377	64,60
SFKH02+ Ni1000 200.08	623384	66,80
SFKH02+ Ni1000 250.08	623391	68,10
SFKH02+ Ni1000 450.08	623407	70,70

Immersion sensor -50..+160 °C – passive Ni1000TK5000		TP1
Item description	Item no.	€
SFKH02+ Ni1000TK5000 050.08	623414	65,60
SFKH02+ Ni1000TK5000 100.08	623421	66,50
SFKH02+ Ni1000TK5000 150.08	623438	68,10
SFKH02+ Ni1000TK5000 200.08	623445	70,30
SFKH02+ Ni1000TK5000 250.08	623452	71,60
SFKH02+ Ni1000TK5000 450.08	623469	74,20

Immersion sensor -50..+150 °C – passive NTC10k		TP1
Item description	Item no.	€
SFKH02+ NTC10k 050.08	623285	58,90
SFKH02+ NTC10k 100.08	623292	59,70
SFKH02+ NTC10k 150.08	623308	61,40
SFKH02+ NTC10k 200.08	623315	63,60
SFKH02+ NTC10k 250.08	623322	64,90
SFKH02+ NTC10k 450.08	623339	67,50

Immersion sensor -50..+150 °C – passive NTC10k Precon		TP1
Item description	Item no.	€
SFKH02+ NTC10k Precon 050.08	623711	58,90
SFKH02+ NTC10k Precon 100.08	623728	59,70
SFKH02+ NTC10k Precon 150.08	623735	61,40
SFKH02+ NTC10k Precon 200.08	623742	63,60
SFKH02+ NTC10k Precon 250.08	623759	64,90
SFKH02+ NTC10k Precon 450.08	623766	67,50

## SFKH02+

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+150 °C – passive NTC20k			TP1
Item description	Item no.	€	
SFKH02+ NTC20k 050.08	623773	58,90	
SFKH02+ NTC20k 100.08	623780	59,70	
SFKH02+ NTC20k 150.08	623797	61,40	
SFKH02+ NTC20k 200.08	623803	63,60	
SFKH02+ NTC20k 250.08	623810	64,90	
SFKH02+ NTC20k 450.08	623827	67,50	

Immersion sensor -50..+150 °C – passive NTC1,8k			TP1
Item description	Item no.	€	
SFKH02+ NTC1,8k 050.08	668729	58,90	
SFKH02+ NTC1,8k 100.08	668743	59,70	
SFKH02+ NTC1,8k 150.08	668736	61,40	
SFKH02+ NTC1,8k 200.08	668750	63,60	
SFKH02+ NTC1,8k 250.08	668767	64,90	
SFKH02+ NTC1,8k 450.08	668774	67,50	

Immersion sensor -50..+120 °C – passive LM235Z			TP1
Item description	Item no.	€	
SFKH02+ LM235Z 050.08	623476	60,70	
SFKH02+ LM235Z 100.08	623483	61,50	
SFKH02+ LM235Z 150.08	623490	63,10	
SFKH02+ LM235Z 200.08	623506	65,40	
SFKH02+ LM235Z 250.08	623513	66,60	
SFKH02+ LM235Z 450.08	623520	69,20	

Options		€
Item description		€
3-wire connection (3-wire)		1,85
4-wire connection (4-wire)		3,70
Temperature -80..+260 °C (T260)		10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel		0,00
Add to price of PT100 for sensor FeT		19,25
Price reduction to PT100 for sensor KTY81-110   KTY81-121   KTY81-122   KTY81-210		-3,40

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V			TP1
Item description	Item no.	€	
SFKH02+ TRV MultiRange 050.08	623858	104,30	
SFKH02+ TRV MultiRange 100.08	623865	104,90	
SFKH02+ TRV MultiRange 150.08	623872	106,20	
SFKH02+ TRV MultiRange 200.08	623889	107,70	
SFKH02+ TRV MultiRange 250.08	623896	108,90	
SFKH02+ TRV MultiRange 450.08	623902	110,90	

Immersion sensor with display temperature – active 0..10 V				TP1
Item description	USEapp	Item no.	€	
SFKH02+ LCD TRV MultiRange 050.08	✓	623988	144,00	
SFKH02+ LCD TRV MultiRange 100.08	✓	623995	144,60	
SFKH02+ LCD TRV MultiRange 150.08	✓	624008	145,90	
SFKH02+ LCD TRV MultiRange 200.08	✓	624015	147,40	
SFKH02+ LCD TRV MultiRange 250.08	✓	624022	148,60	
SFKH02+ LCD TRV MultiRange 450.08	✓	624039	150,60	

## SFKH02+

Immersion sensor temperature – active 4..20 mA			TP1
Item description	Item no.	€	
SFKH02+ TRA MultiRange 050.08	623919	104,30	
SFKH02+ TRA MultiRange 100.08	623926	104,90	
SFKH02+ TRA MultiRange 150.08	623933	106,20	
SFKH02+ TRA MultiRange 200.08	623940	107,70	
SFKH02+ TRA MultiRange 250.08	623957	108,90	
SFKH02+ TRA MultiRange 450.08	623964	110,90	

Item description: product | TRV/TRA MultiRange | pocket (length.Ø)

Immersion sensor with display temperature – active 4..20 mA				TP1
Item description	USEapp	Item no.	€	
SFKH02+ LCD TRA MultiRange 050.08	✓	624046	144,00	
SFKH02+ LCD TRA MultiRange 100.08	✓	624053	144,60	
SFKH02+ LCD TRA MultiRange 150.08	✓	624060	145,90	
SFKH02+ LCD TRA MultiRange 200.08	✓	624077	147,40	
SFKH02+ LCD TRA MultiRange 250.08	✓	624084	148,60	
SFKH02+ LCD TRA MultiRange 450.08	✓	624091	150,60	

Item description: product | TRV/TRA MultiRange | relay | pocket (length.Ø)

Immersion sensor temperature – active 0..10 V + relay				TP1
Item description	USEapp	Item no.	€	
SFKH02+ TRV MultiRange relay 050.08	✓	666312	143,30	
SFKH02+ TRV MultiRange relay 100.08	✓	666329	143,90	
SFKH02+ TRV MultiRange relay 150.08	✓	666336	145,20	
SFKH02+ TRV MultiRange relay 200.08	✓	666343	146,70	
SFKH02+ TRV MultiRange relay 250.08	✓	666367	147,90	
SFKH02+ TRV MultiRange relay 450.08	✓	666374	149,90	

Immersion sensor with display temperature – active 0..10 V + relay				TP1
Item description	USEapp	Item no.	€	
SFKH02+ LCD TRV MultiRange relay 050.08	✓	666381	173,30	
SFKH02+ LCD TRV MultiRange relay 100.08	✓	666398	173,90	
SFKH02+ LCD TRV MultiRange relay 150.08	✓	666404	175,20	
SFKH02+ LCD TRV MultiRange relay 200.08	✓	666411	176,70	
SFKH02+ LCD TRV MultiRange relay 250.08	✓	666428	177,90	
SFKH02+ LCD TRV MultiRange relay 450.08	✓	666435	179,90	

Options	
Item description	€
Temperature -80..+260 °C (T260)	10,90

Item description: product | BUS | pocket (length.Ø)

## SFKH02+



Immersion sensor temperature – active LON			TP1
Item description	Item no.	€	
SFKH02 LON 050.08	95365	214,30	
SFKH02 LON 100.08	95372	215,10	
SFKH02 LON 150.08	95389	216,80	
SFKH02 LON 200.08	95396	219,00	
SFKH02 LON 250.08	95402	220,30	
SFKH02 LON 450.08	95419	222,90	



Immersion sensor temperature – active RS485 Modbus				TP1
Item description	USEapp	Item no.	€	
SFKH02+ RS485 Modbus 050.08	✓	666442	146,30	
SFKH02+ RS485 Modbus 100.08	✓	666459	146,90	
SFKH02+ RS485 Modbus 150.08	✓	666466	148,20	
SFKH02+ RS485 Modbus 200.08	✓	666480	149,70	
SFKH02+ RS485 Modbus 250.08	✓	666497	150,90	
SFKH02+ RS485 Modbus 450.08	✓	666503	152,90	



Immersion sensor with display temperature – active RS485 Modbus				TP1
Item description	USEapp	Item no.	€	
SFKH02+ LCD RS485 Modbus 050.08	✓	666510	195,30	
SFKH02+ LCD RS485 Modbus 100.08	✓	666527	195,90	
SFKH02+ LCD RS485 Modbus 150.08	✓	666534	197,20	
SFKH02+ LCD RS485 Modbus 200.08	✓	666541	198,70	
SFKH02+ LCD RS485 Modbus 250.08	✓	666558	199,90	
SFKH02+ LCD RS485 Modbus 450.08	✓	666565	201,90	

Replacement articles – mounting accessories USE				AS1
Item description	Item no.	On stock	€	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"

Accessories – bonded pockets						AS1
Item description	Length	Pocket length	Item no.	On stock	€	
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	⊖	44,85	
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	⊖	51,40	
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	⊖	57,90	
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	⊖	63,70	



SFK01

## SFK01

Passive immersion sensor with neck pipe and integrated thermowell pocket for high temperature measurement of liquids in duct applications.

TECHNICAL DATA	
Measuring values	temperature
Medium	gases, fluids
Output voltage	passive sensor
Measuring range temp.	passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	2-wire (standard), 3-wire, 4-wire
Enclosure	shape J, aluminium
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50   100   150   200   250   450 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure passive: -25..+90 °C, max. 85% rH short term condensation
Notes	for other sensors please request



## Highlights

### Removable measuring insert

The measuring insert can be exchanged without having to empty the medium.

### SI-Protection

The SI-Protection reliably protects our sensors from humidity and vibrations.

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive PT100 TP1		
Item description	Item no.	€
SFK01 PT100 050.08	37662	44,50
SFK01 PT100 100.08	27717	45,40
SFK01 PT100 150.08	27724	46,80
SFK01 PT100 200.08	27731	48,60
SFK01 PT100 250.08	27748	49,10
SFK01 PT100 450.08	27755	52,00

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN TP1		
Item description	Item no.	€
SFK01 PT100 1/3 DIN 050.08	27762	48,20
SFK01 PT100 1/3 DIN 100.08	27779	49,10
SFK01 PT100 1/3 DIN 150.08	27786	50,50
SFK01 PT100 1/3 DIN 200.08	27793	52,30
SFK01 PT100 1/3 DIN 250.08	27809	52,80
SFK01 PT100 1/3 DIN 450.08	27816	55,70

Immersion sensor -50..+160 °C – passive PT1000 TP1		
Item description	Item no.	€
SFK01 PT1000 050.08	27823	46,60
SFK01 PT1000 100.08	27830	47,50
SFK01 PT1000 150.08	27847	49,00
SFK01 PT1000 200.08	27854	50,80
SFK01 PT1000 250.08	27861	51,20
SFK01 PT1000 450.08	27878	54,20

Immersion sensor -50..+160 °C – passive PT1000 1/3 DIN TP1		
Item description	Item no.	€
SFK01 PT1000 1/3 DIN 050.08	27885	49,60
SFK01 PT1000 1/3 DIN 100.08	27892	50,50
SFK01 PT1000 1/3 DIN 150.08	36740	52,00
SFK01 PT1000 1/3 DIN 200.08	36757	53,80
SFK01 PT1000 1/3 DIN 250.08	36764	54,20
SFK01 PT1000 1/3 DIN 450.08	36771	57,20

## SFK01

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
SFK01 Ni1000 050.08	36788	46,40
SFK01 Ni1000 100.08	36795	47,30
SFK01 Ni1000 150.08	36801	48,70
SFK01 Ni1000 200.08	36818	50,50
SFK01 Ni1000 250.08	36825	50,90
SFK01 Ni1000 450.08	45292	53,90

Immersion sensor -50..+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
SFK01 Ni1000TK5000 050.08	45308	49,80
SFK01 Ni1000TK5000 100.08	45315	50,70
SFK01 Ni1000TK5000 150.08	45322	52,20
SFK01 Ni1000TK5000 200.08	45339	54,00
SFK01 Ni1000TK5000 250.08	45346	54,40
SFK01 Ni1000TK5000 450.08	45353	57,40

Immersion sensor -50..+150 °C – passive NTC10k TP1		
Item description	Item no.	€
SFK01 NTC10k 050.08	45421	43,10
SFK01 NTC10k 100.08	45438	44,10
SFK01 NTC10k 150.08	45445	45,50
SFK01 NTC10k 200.08	45452	47,30
SFK01 NTC10k 250.08	45469	47,70
SFK01 NTC10k 450.08	45476	50,70

Immersion sensor -50..+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
SFK01 NTC10k Precon 050.08	45544	43,10
SFK01 NTC10k Precon 100.08	45551	44,10
SFK01 NTC10k Precon 150.08	45568	45,50
SFK01 NTC10k Precon 200.08	45575	47,30
SFK01 NTC10k Precon 250.08	45582	47,70
SFK01 NTC10k Precon 450.08	45599	50,70

Immersion sensor -50..+150 °C – passive NTC20k TP1		
Item description	Item no.	€
SFK01 NTC20k 050.08	45483	43,10
SFK01 NTC20k 100.08	45490	44,10
SFK01 NTC20k 150.08	45506	45,50
SFK01 NTC20k 200.08	45513	47,30
SFK01 NTC20k 250.08	45520	47,70
SFK01 NTC20k 450.08	45537	50,70

Immersion sensor -50..+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
SFK01 NTC1,8k 050.08	351140	43,10
SFK01 NTC1,8k 100.08	270311	44,10
SFK01 NTC 1,8k 150.08	270304	45,50
SFK01 NTC1,8k 200.08	263566	47,30
SFK01 NTC 1,8k 250.08	249362	47,70
SFK01 NTC1,8k 450.08	293655	50,70

Immersion sensor -50..+120 °C – passive LM235Z TP1		
Item description	Item no.	€
SFK01 LM235Z 050.08	45605	44,90
SFK01 LM235Z 100.08	45612	45,80
SFK01 LM235Z 150.08	45629	47,20
SFK01 LM235Z 200.08	45636	49,00
SFK01 LM235Z 250.08	45643	49,50
SFK01 LM235Z 450.08	45650	52,40

## SFK01

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**SFK01 | FeT | 450.08 | 3-wire | T260**

**SFK01** = product  
**FeT** = sensor  
**450.08** = pocket (length.Ø)  
**3-wire** = number of wires  
**T260** = temperature

Accessories - bonded pockets					AS1
Item description	Length	Pocket length	Item no.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	☹	44,85
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	☹	51,40
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	☹	57,90
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	☹	63,70



SFKH01



## SFKH01

Passive immersion sensor with neck pipe and integrated thermowell pocket for high temperature measurement of liquids in duct applications.

### TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage	passive sensor
Measuring range temp.	passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	2-wire (standard), 3-wire, 4-wire
Enclosure	shape J, aluminium
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Neck pipe	stainless steel V2A, Ø=12 mm, L=70 mm
Pocket	stainless steel V4A, Ø=8 mm, thread G 1/2" mounting length: 50   100   150   200   250   450 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure passive: -25..+90 °C, max. 85% rH short term condensation
Notes	for other sensors please request

## Highlights

### Removable measuring insert

The measuring insert can be exchanged without having to empty the medium.

### SI-Protection

The SI-Protection reliably protects our sensors from humidity and vibrations.

Immersion sensor -50..+160 °C – passive PT100		TP1
Item description	Item no.	€
SFKH01 PT100 050.08	54652	68,60
SFKH01 PT100 100.08	55567	69,50
SFKH01 PT100 150.08	55574	70,90
SFKH01 PT100 200.08	55581	72,70
SFKH01 PT100 250.08	55598	73,20
SFKH01 PT100 450.08	55604	76,20

Immersion sensor -50..+160 °C – passive PT100 1/3 DIN		TP1
Item description	Item no.	€
SFKH01 PT100 1/3 DIN 050.08	55611	72,30
SFKH01 PT100 1/3 DIN 100.08	55628	73,20
SFKH01 PT100 1/3 DIN 150.08	55635	74,60
SFKH01 PT100 1/3 DIN 200.08	55642	76,50
SFKH01 PT100 1/3 DIN 250.08	55659	76,90
SFKH01 PT100 1/3 DIN 450.08	55666	79,90



## SFKH01

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50...+160 °C – passive PT1000 TP1		
Item description	Item no.	€
SFKH01 PT1000 050.08	55673	70,80
SFKH01 PT1000 100.08	55680	71,70
SFKH01 PT1000 150.08	55697	73,10
SFKH01 PT1000 200.08	55703	74,90
SFKH01 PT1000 250.08	55710	75,40
SFKH01 PT1000 450.08	55727	78,40

Immersion sensor -50...+160 °C – passive PT1000 1/3 DIN TP1		
Item description	Item no.	€
SFKH01 PT1000 1/3 DIN 050.08	55734	73,80
SFKH01 PT1000 1/3 DIN 100.08	55741	74,70
SFKH01 PT1000 1/3 DIN 150.08	55758	76,10
SFKH01 PT1000 1/3 DIN 200.08	55765	77,90
SFKH01 PT1000 1/3 DIN 250.08	55772	78,40
SFKH01 PT1000 1/3 DIN 450.08	55789	81,40

Immersion sensor -50...+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
SFKH01 Ni1000 050.08	55796	70,50
SFKH01 Ni1000 100.08	55802	71,40
SFKH01 Ni1000 150.08	55819	72,80
SFKH01 Ni1000 200.08	55826	74,60
SFKH01 Ni1000 250.08	55833	75,10
SFKH01 Ni1000 450.08	55840	78,10

Immersion sensor -50...+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
SFKH01 Ni1000TK5000 050.08	55857	74,00
SFKH01 Ni1000TK5000 100.08	55864	74,90
SFKH01 Ni1000TK5000 150.08	55871	76,30
SFKH01 Ni1000TK5000 200.08	55888	78,10
SFKH01 Ni1000TK5000 250.08	55895	78,60
SFKH01 Ni1000TK5000 450.08	55901	81,60

Immersion sensor -50...+150 °C – passive NTC10k TP1		
Item description	Item no.	€
SFKH01 NTC10k 050.08	55970	67,30
SFKH01 NTC10k 100.08	55987	68,20
SFKH01 NTC10k 150.08	55994	69,60
SFKH01 NTC10k 200.08	56007	71,40
SFKH01 NTC10k 250.08	56014	71,90
SFKH01 NTC10k 450.08	56021	74,90

Immersion sensor -50...+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
SFKH01 NTC10k Precon 050.08	56090	67,30
SFKH01 NTC10k Precon 100.08	56106	68,20
SFKH01 NTC10k Precon 150.08	56113	69,60
SFKH01 NTC10k Precon 200.08	56120	71,40
SFKH01 NTC10k Precon 250.08	56137	71,90
SFKH01 NTC10k Precon 450.08	56144	74,90

Immersion sensor -50...+150 °C – passive NTC20k TP1		
Item description	Item no.	€
SFKH01 NTC20k 050.08	56038	67,30
SFKH01 NTC20k 100.08	56045	68,20
SFKH01 NTC20k 150.08	56052	69,60
SFKH01 NTC20k 200.08	56069	71,40
SFKH01 NTC20k 250.08	56076	71,90
SFKH01 NTC20k 450.08	56083	74,90

Immersion sensor -50...+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
SFKH01 NTC1,8k 050.08	351287	67,30
SFKH01 NTC1,8k 100.08	258708	68,20
SFKH01 NTC1,8k 150.08	351317	69,60
SFKH01 NTC1,8k 200.08	351379	71,40
SFKH01 NTC1,8k 250.08	351393	71,90
SFKH01 NTC1,8k 450.08	351416	74,90

Immersion sensor -50...+120 °C – passive LM235Z TP1		
Item description	Item no.	€
SFKH01 LM235Z 050.08	56151	69,00
SFKH01 LM235Z 100.08	56168	69,90
SFKH01 LM235Z 150.08	56175	71,30
SFKH01 LM235Z 200.08	56182	73,00
SFKH01 LM235Z 250.08	56199	73,60
SFKH01 LM235Z 450.08	56205	76,60

## SFKH01

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**SFKH01 | FeT | 450.08 | 3-wire | T260**

**SFKH01** = product

**FeT** = sensor

**450.08** = pocket (length.Ø)

**3-wire** = 3-wire connection

**T260** = temperature

Accessories – bonded pockets					AS1
Item description	Length	Pocket length	Item no.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	☹	44,85
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	☹	51,40
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	☹	57,90
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	☹	63,70



SFK03

## SFK03

Immersion sensor with neck pipe and integrated thermowell pocket for high temperature measurement of liquids in duct applications.

### TECHNICAL DATA

Measuring values	temperature
Medium	gases, fluids
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V
Output Amp	TRA: 1x 4..20 mA
Power supply	TRV: 15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 1 W (24 V =)   1,4 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV5   TRA5: 0..+300 °C passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	TRV   TRA: $\pm 0,2$ °C   $\pm 0,1\%$ of measured value (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. $\varnothing=8$ mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V4A, $\varnothing=8$ mm, thread G 1/2" mounting length: 100   150   200   250 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure passive: -25..+90 °C, max. 85% rH short term condensation enclosure TRV/TRA: -25..+70 °C, max. 85% rH short term condensation
Notes	for other sensors please request



## Highlights

### Removable measuring insert

The measuring insert can be exchanged without having to empty the medium.

### SI-Protection

The SI-Protection reliably protects our sensors from humidity and vibrations.

## SFK03

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50...+160 °C – passive PT100 TP1		
Item description	Item no.	€
SFK03 PT100 100.08	64309	52,70
SFK03 PT100 150.08	71079	54,60
SFK03 PT100 200.08	71086	56,60
SFK03 PT100 250.08	71093	59,50

Immersion sensor -50...+160 °C – passive PT100 1/3 DIN TP1		
Item description	Item no.	€
SFK03 PT100 1/3 DIN 100.08	71109	56,60
SFK03 PT100 1/3 DIN 150.08	71116	58,50
SFK03 PT100 1/3 DIN 200.08	71123	60,40
SFK03 PT100 1/3 DIN 250.08	71130	63,30

Immersion sensor -50...+160 °C – passive PT1000 TP1		
Item description	Item no.	€
SFK03 PT1000 100.08	71147	54,90
SFK03 PT1000 150.08	71154	56,80
SFK03 PT1000 200.08	71161	58,70
SFK03 PT1000 250.08	71178	61,60

Immersion sensor -50...+160 °C – passive PT1000 1/3 DIN TP1		
Item description	Item no.	€
SFK03 PT1000 1/3 DIN 100.08	71185	58,10
SFK03 PT1000 1/3 DIN 150.08	71192	60,00
SFK03 PT1000 1/3 DIN 200.08	71208	62,00
SFK03 PT1000 1/3 DIN 250.08	71215	64,90

Immersion sensor -50...+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
SFK03 Ni1000 100.08	71222	54,60
SFK03 Ni1000 150.08	71239	56,50
SFK03 Ni1000 200.08	71246	58,50
SFK03 Ni1000 250.08	71253	61,30

Immersion sensor -50...+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
SFK03 Ni1000TK5000 100.08	71260	58,10
SFK03 Ni1000TK5000 150.08	71277	60,00
SFK03 Ni1000TK5000 200.08	71284	62,00
SFK03 Ni1000TK5000 250.08	71291	64,80

Immersion sensor -50...+150 °C – passive NTC10k TP1		
Item description	Item no.	€
SFK03 NTC10k 100.08	71345	51,40
SFK03 NTC10k 150.08	71352	53,30
SFK03 NTC10k 200.08	71369	55,20
SFK03 NTC10k 250.08	71376	58,10

Immersion sensor -50...+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
SFK03 NTC10k Precon 100.08	71420	51,40
SFK03 NTC10k Precon 150.08	71437	53,30
SFK03 NTC10k Precon 200.08	71444	55,20
SFK03 NTC10k Precon 250.08	71451	58,10

Immersion sensor -50...+150 °C – passive NTC20k TP1		
Item description	Item no.	€
SFK03 NTC20k 100.08	71383	51,40
SFK03 NTC20k 150.08	71390	53,30
SFK03 NTC20k 200.08	71406	55,20
SFK03 NTC20k 250.08	71413	58,10

Immersion sensor -50...+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
SFK03 NTC1,8k 100.08	351652	51,40
SFK03 NTC1,8k 150.08	351676	53,30
SFK03 NTC1,8k 200.08	351683	55,20
SFK03 NTC1,8k 250.08	351706	58,10

Immersion sensor -50...+120 °C – passive LM235Z TP1		
Item description	Item no.	€
SFK03 LM235Z 100.08	71468	54,00
SFK03 LM235Z 150.08	71475	55,90
SFK03 LM235Z 200.08	71482	57,90
SFK03 LM235Z 250.08	71499	60,80

## SFK03

Options	
Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**SFK03 | FeT | 250.08 | T260**

**SFK03** = product  
**FeT** = sensor  
**250.08** = pocket (length.Ø)  
**T260** = temperature

Item description: product | TRVx | pocket (length.Ø)

Immersion sensor -50..+50 °C – active TRV1 0..10 V TP1		
Item description	Item no.	€
SFK03 TRV1 100.08	318853	139,20
SFK03 TRV1 150.08	352024	140,50
SFK03 TRV1 200.08	352062	141,90
SFK03 TRV1 250.08	352109	143,90

Immersion sensor -10..+120 °C – active TRV2 0..10 VTRV2 TP1		
Item description	Item no.	€
SFK03 TRV2 100.08	335744	139,20
SFK03 TRV2 150.08	352031	140,50
SFK03 TRV2 200.08	246958	141,90
SFK03 TRV2 250.08	352253	143,90

Immersion sensor 0..+50 °C – active TRV3 0..10 V TP1		
Item description	Item no.	€
SFK03 TRV3 100.08	281775	139,20
SFK03 TRV3 150.08	352048	140,50
SFK03 TRV3 200.08	352079	141,90
SFK03 TRV3 250.08	352260	143,90

Immersion sensor 0..+160 °C – active TRV4 0..10 V TP1		
Item description	Item no.	€
SFK03 TRV4 100.08	298414	139,20
SFK03 TRV4 150.08	292115	140,50
SFK03 TRV4 200.08	324403	141,90
SFK03 TRV4 250.08	352277	143,90

Immersion sensor 0..+260 °C – active TRV5 0..10 V TP1		
Item description	Item no.	€
SFK03 TRV5 100.08	243933	146,80
SFK03 TRV5 150.08	295314	148,10
SFK03 TRV5 200.08	297509	149,50
SFK03 TRV5 250.08	306607	151,60

## SFK03

Item description: product | TRAx | pocket (length.Ø)

Immersion sensor -50...+50 °C – active TRA1 4...20 mA TP1		
Item description	Item no.	€
SFK03 TRA1 100.08	194440	139,20
SFK03 TRA1 150.08	200899	140,50
SFK03 TRA1 200.08	352055	141,90
SFK03 TRA1 250.08	254908	143,90

Immersion sensor -10...+120 °C – active TRA2 4...20 mA TP1		
Item description	Item no.	€
SFK03 TRA2 100.08	189316	139,20
SFK03 TRA2 150.08	344166	140,50
SFK03 TRA2 200.08	315746	141,90
SFK03 TRA2 250.08	352086	143,90

Immersion sensor 0...+50 °C – active TRA3 4...20 mA TP1		
Item description	Item no.	€
SFK03 TRA3 100.08	165280	141,90
SFK03 TRA3 150.08	165044	140,50
SFK03 TRA3 200.08	132220	139,20
SFK03 TRA3 250.08	303835	143,90

Immersion sensor 0...+160 °C – active TRA4 4...20 mA TP1		
Item description	Item no.	€
SFK03 TRA4 100.08	293051	139,20
SFK03 TRA4 150.08	295024	140,50
SFK03 TRA4 200.08	239226	141,90
SFK03 TRA4 250.08	352093	143,90

Immersion sensor 0...+260 °C – active TRA5 4...20 mA TP1		
Item description	Item no.	€
SFK03 TRA5 100.08	131674	146,80
SFK03 TRA5 150.08	146821	148,10
SFK03 TRA5 200.08	152884	149,50
SFK03 TRA5 250.08	157421	151,60

Accessories – bonded pockets AS1					
Item description	Length	Pocket length	Item no.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	☉	44,85
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	☉	51,40
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	☉	57,90
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	☉	63,70



SFKH03



## SFKH03

Immersion sensor with neck pipe and integrated thermowell pocket for high temperature measurement of liquids in duct applications.

TECHNICAL DATA	
Measuring values	temperature
Medium	gases, fluids
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V
Output Amp	TRA: 1x 4..20 mA
Power supply	TRV: 15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 1 W (24 V =)   1,4 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV5   TRA5: 0..+300 °C passive: -50..+120 +150 +160 +260 °C, depending on used sensor
Accuracy temperature	TRV   TRA: $\pm 0,2$ °C   $\pm 0,1\%$ of measured value (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. $\varnothing=8$ mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Neck pipe	stainless steel V2A, $\varnothing=15$ mm, L=70 mm
Pocket	stainless steel V4A, $\varnothing=8$ mm, thread G 1/2" mounting length: 100   150   200   250 mm
Ambient condition	-50..+160   +150   +120 °C (only end of sensor) optional -80..+260 °C (only end of sensor) enclosure passive: -25..+90 °C, max. 85% rH short term condensation enclosure TRV/TRA: -25..+70 °C, max. 85% rH short term condensation
Notes	for other sensors please request

## Highlights

### Removable measuring insert

The measuring insert can be exchanged without having to empty the medium.

### SI-Protection

The SI-Protection reliably protects our sensors from humidity and vibrations.

## SFKH03

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50...+160 °C – passive PT100 TP1		
Item description	Item no.	€
SFKH03 PT100 100.08	64323	70,70
SFKH03 PT100 150.08	75053	72,60
SFKH03 PT100 200.08	75077	74,60
SFKH03 PT100 250.08	75084	77,50

Immersion sensor -50...+160 °C – passive PT100 1/3 DIN TP1		
Item description	Item no.	€
SFKH03 PT100 1/3 DIN 100.08	75091	74,60
SFKH03 PT100 1/3 DIN 150.08	75107	76,50
SFKH03 PT100 1/3 DIN 200.08	75114	78,50
SFKH03 PT100 1/3 DIN 250.08	75121	81,40

Immersion sensor -50...+160 °C – passive PT1000 TP1		
Item description	Item no.	€
SFKH03 PT1000 100.08	75138	72,90
SFKH03 PT1000 150.08	75145	74,80
SFKH03 PT1000 200.08	75152	76,80
SFKH03 PT1000 250.08	75169	79,70

Immersion sensor -50...+160 °C – passive PT1000 1/3 DIN TP1		
Item description	Item no.	€
SFKH03 PT1000 1/3 DIN 100.08	75176	76,10
SFKH03 PT1000 1/3 DIN 150.08	75183	78,00
SFKH03 PT1000 1/3 DIN 200.08	75190	80,00
SFKH03 PT1000 1/3 DIN 250.08	75206	82,90

Immersion sensor -50...+160 °C – passive Ni1000 TP1		
Item description	Item no.	€
SFKH03 Ni1000 100.08	75213	72,60
SFKH03 Ni1000 150.08	75220	74,50
SFKH03 Ni1000 200.08	75237	76,50
SFKH03 Ni1000 250.08	75244	79,40

Immersion sensor -50...+160 °C – passive Ni1000TK5000 TP1		
Item description	Item no.	€
SFKH03 Ni1000TK5000 100.08	75251	76,10
SFKH03 Ni1000TK5000 150.08	75268	78,00
SFKH03 Ni1000TK5000 200.08	75275	80,00
SFKH03 Ni1000TK5000 250.08	75282	82,90

Immersion sensor -50...+150 °C – passive NTC10k TP1		
Item description	Item no.	€
SFKH03 NTC10k 100.08	74568	69,40
SFKH03 NTC10k 150.08	75343	71,30
SFKH03 NTC10k 200.08	75350	73,30
SFKH03 NTC10k 250.08	75367	76,20

Immersion sensor -50...+150 °C – passive NTC10k Precon TP1		
Item description	Item no.	€
SFKH03 NTC10k Precon 100.08	75411	69,40
SFKH03 NTC10k Precon 150.08	75428	71,30
SFKH03 NTC10k Precon 200.08	75435	73,30
SFKH03 NTC10k Precon 250.08	75442	76,20

Immersion sensor -50...+150 °C – passive NTC20k TP1		
Item description	Item no.	€
SFKH03 NTC20k 100.08	75374	69,40
SFKH03 NTC20k 150.08	75381	71,30
SFKH03 NTC20k 200.08	75398	73,30
SFKH03 NTC20k 250.08	75404	76,20

Immersion sensor -50...+150 °C – passive NTC1,8k TP1		
Item description	Item no.	€
SFKH03 NTC1,8k 100.08	351553	69,40
SFKH03 NTC1,8k 150.08	351607	71,30
SFKH03 NTC1,8k 200.08	351638	73,30
SFKH03 NTC1,8k 250.08	351669	76,20

Immersion sensor -50...+120 °C – passive LM235Z TP1		
Item description	Item no.	€
SFKH03 LM235Z 100.08	75459	72,00
SFKH03 LM235Z 150.08	75466	74,00
SFKH03 LM235Z 200.08	75473	75,90
SFKH03 LM235Z 250.08	75480	78,80



## SFKH03

### Options

Item description	€
3-wire connection (3-wire)	1,85
4-wire connection (4-wire)	3,70
Temperature -80..+260 °C (T260)	10,90

Order example for different items:

**SFKH03 | NTC20k | 250.08 | T260 | 3-wire**

**SFKH03** = product

**NTC20k** = sensor

**250.08** = pocket (length.Ø)

**T260** = temperature

**3-wire** = 3-wire connection

Item description: product | TRVx | pocket (length.Ø)

Immersion sensor -50..+50 °C – active TRV1 0..10 V TP1		
Item description	Item no.	€
SFKH03 TRV1 100.08	320986	150,40
SFKH03 TRV1 150.08	351782	151,70
SFKH03 TRV1 200.08	351812	153,10
SFKH03 TRV1 250.08	351904	155,10

Immersion sensor -10..+120 °C – active TRV2 0..10 VTRV2 TP1		
Item description	Item no.	€
SFKH03 TRV2 100.08	351737	150,40
SFKH03 TRV2 150.08	351799	151,70
SFKH03 TRV2 200.08	351829	153,10
SFKH03 TRV2 250.08	351911	155,10

Immersion sensor 0..+50 °C – active TRV3 0..10 V TP1		
Item description	Item no.	€
SFKH03 TRV3 100.08	351744	150,40
SFKH03 TRV3 150.08	288071	151,70
SFKH03 TRV3 200.08	351836	153,10
SFKH03 TRV3 250.08	351928	155,10

Immersion sensor 0..+160 °C – active TRV4 0..10 V TP1		
Item description	Item no.	€
SFKH03 TRV4 100.08	344784	150,40
SFKH03 TRV4 150.08	351805	151,70
SFKH03 TRV4 200.08	258548	153,10
SFKH03 TRV4 250.08	256711	155,10

Immersion sensor 0..+260 °C – active TRV5 0..10 V TP1		
Item description	Item no.	€
SFKH03 TRV5 100.08	115001	158,00
SFKH03 TRV5 150.08	261944	159,30
SFKH03 TRV5 200.08	258555	160,70
SFKH03 TRV5 250.08	152716	162,70

## SFKH03

Item description: product | TRAx | pocket (length.Ø)

Immersion sensor -50..+50 °C – active TRA1 4..20 mA TP1		
Item description	Item no.	€
SFKH03 TRA1 100.08	180832	150,40
SFKH03 TRA1 150.08	256193	151,70
SFKH03 TRA1 200.08	215350	153,10
SFKH03 TRA1 250.08	351843	155,10

Immersion sensor -10..+120 °C – active TRA2 4..20 mA TP1		
Item description	Item no.	€
SFKH03 TRA2 100.08	307888	150,40
SFKH03 TRA2 150.08	227940	151,70
SFKH03 TRA2 200.08	338011	153,10
SFKH03 TRA2 250.08	274265	155,10

Immersion sensor 0..+50 °C – active TRA3 4..20 mA TP1		
Item description	Item no.	€
SFKH03 TRA3 100.08	200622	150,40
SFKH03 TRA3 150.08	217828	151,70
SFKH03 TRA3 200.08	200110	153,10
SFKH03 TRA3 250.08	202909	155,10

Immersion sensor 0..+160 °C – active TRA4 4..20 mA TP1		
Item description	Item no.	€
SFKH03 TRA4 100.08	284479	150,40
SFKH03 TRA4 150.08	351768	151,70
SFKH03 TRA4 200.08	276788	153,10
SFKH03 TRA4 250.08	336857	155,10

Immersion sensor 0..+260 °C – active TRA5 4..20 mA TP1		
Item description	Item no.	€
SFKH03 TRA5 100.08	147071	158,00
SFKH03 TRA5 150.08	291873	159,30
SFKH03 TRA5 200.08	328425	160,70
SFKH03 TRA5 250.08	145312	162,70

Accessories – bonded pockets AS1					
Item description	Length	Pocket length	Item no.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	☺	44,85
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	☺	51,40
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	☺	57,90
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	☺	63,70



RGS03

## RGS03

Immersion sensor (high temperature) with integrated thermowell pocket for temperature measurement of liquids in duct applications for heating, ventilation and air-conditioning. Also suitable for exhaust systems.

TECHNICAL DATA	
Measuring values	temperature
Medium	gases, fluids
Output voltage	passive sensor PT100 TRV: 1x 0..10 V
Output Amp	TRA: 1x 4..20 mA
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 1 W (24 V =)   1,4 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV6   TRA6: 0..+400 °C TRV7   TRA7: 0..+600 °C
Working range temp.	0..+500 °C temporarily up to +600 °C
Accuracy temperature	TRV   TRA: $\pm 0,2$ °C   $\pm 0,1\%$ of measured value (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Sensor	PT100, 3-wire
Enclosure	shape B, aluminium
Protection	IP66 according to EN 60529
Cable entry	M20 for wire max. $\varnothing=8$ mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Neck pipe	stainless steel V2A
Pocket	stainless steel V4A, $\varnothing=9$ mm, thread G 1/2" mounting length: 250   500 mm
Ambient condition	enclosure passive: -25..+90 °C, max. 85% rH short term condensation enclosure TRV/TRA: -25..+70 °C, max. 85% rH short term condensation

## RGS03

Item description: product | sensor | pocket (length.Ø)

Immersion sensor -50..+600 °C – passive PT100/PT1000			TP1
Item description	Item no.	€	
RGS03 PT100 250.09	79297	144,60	
RGS03 PT100 500.09	385190	147,00	
RGS03 PT1000 250.09	79310	144,60	
RGS03 PT1000 500.09	79327	147,00	

Item description: product | TRVx/TRAx | pocket (length.Ø)

Immersion sensor temperature 0..+400 °C – active TRV6 0..10 V   TRA6 4..20 mA			TP1
Item description	Item no.	€	
RGS03 TRV6 250.09	223942	236,50	
RGS03 TRV6 500.09	351959	238,90	
RGS03 TRA6 250.09	164115	236,50	
RGS03 TRA6 500.09	155281	238,90	

Immersion sensor temperature 0..+600 °C – active TRV7 0..10 V   TRA7 4..20 mA			TP1
Item description	Item no.	€	
RGS03 TRV7 250.09	351935	236,50	
RGS03 TRV7 500.09	244824	238,90	
RGS03 TRA7 250.09	79334	236,50	
RGS03 TRA7 500.09	79341	238,90	



AGS54+

## AGS54+

Sensor with hinged lid enclosure USE for outdoor temperature measurement: cold rooms, greenhouses, production plants and warehouses.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive sensor
Measuring range temp.	passive: depending on used sensor
Accuracy temperature	passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Enclosure	enclosure USE-S, PC, pure white
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. $\varnothing=8$ mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Ambient condition	enclosure passive: -35..+90 °C max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	for other sensors please request

## Highlights

### Hinged lid enclosure USE

The AGS54+ will be delivered with our newest innovation from our enclosure range. The hinged lid enclosure makes simple wiring possible without any additionally required assembly tools. For more flexibility the modular design of the enclosure offers the possibility of exchanging individual components (e.g. cable entry).

### Mounting

The mounting base, which is included in delivery, permits the simple clipping on of the enclosure and guarantees the thermal separation of the mounting location and the sensor.

### Thought out in all details

The decisive detail is the removable cable entry of USE: in combination with the removable plug-in terminal it allows the quick and easy wiring through the opening – comfortable pre-assembly included. The practical hinged cover with its quick-release feature cannot be lost and thus is always there where it belongs.

The additional lock with (only) one screw is also possible for special applications.



## AGS54+

Item description: product | sensor

Outdoor sensor -35...+90 °C – passive				TP2
Item description	Item no.	On stock	€	
AGS54+ without sensor	622776		11,00	
AGS54+ PT100	622837	☉	14,90	
AGS54+ PT100 1/3 DIN	622844		18,60	
AGS54+ PT1000	622851	☉	17,10	
AGS54+ PT1000 1/3 DIN	622783		20,00	
AGS54+ Ni1000	622806	☉	16,70	
AGS54+ Ni1000TK5000	622813	☉	20,30	
AGS54+ NTC10k	622790	☉	13,60	
AGS54+ NTC10k Precon	622868		13,60	
AGS54+ NTC5k	624275		13,60	
AGS54+ NTC20k	622875	☉	13,60	
AGS54+ NTC1,8k	643825	☉	13,60	
AGS54+ LM235Z	622820	☉	15,30	
AGS54+ KTY81-110	622899		11,50	
AGS54+ KTY81-121	622905		11,50	
AGS54+ KTY81-122	622912		11,50	
AGS54+ KTY81-210	622929		11,50	
AGS54+ DS18B20 1-wire	622882		14,90	

Options	
Item description	€
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**AGS54+ | FeT**

**AGS54+** = product

**FeT** = sensor

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	☉	4,60	
Mounting base enclosure USE-S pure white	667722	☉	5,50	
Rawplugs and screws (2 pcs. each)	102209	☉	0,80	
Sun/rain protection RS150	103329	☉	22,70	

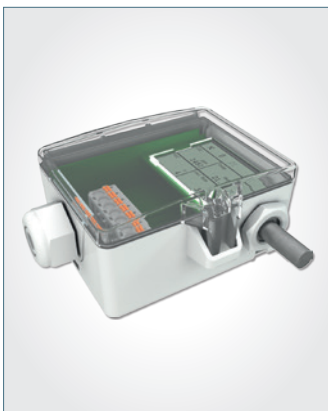
For cable entries and sealing inserts please refer to chapter "Accessories"



AGS55+ passive / TRV / TRA



AGS55+ RS485 Modbus / relay



AGS55+ LCD

## AGS55+

Sensor for outdoor temperature measurement: cold rooms, greenhouses, production plants and warehouses. Stainless Steel external probe for faster response. Replaces AGS54 ext. in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus; LON: enclosure PA6, pure white, with quick lock screws).

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp)
Output Amp	TRA: 1x 4..20 mA
Output switch contact	floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%), TRA: 15..24 V = (±10%) LON: 15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: -50..+50 °C LON: -45..+130 °C, RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: depending on used sensor
Accuracy temperature	±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white, LCD: cover PC, transparent LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm, removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V2A, Ø=6 mm, L=25 mm
Ambient condition	enclosure: -35..+70 °C max. 85% rH short term condensation enclosure passive: -35..+90 °C, max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white LCD/BUS/relay: incl. mounting base enclosure USE-M pure white
Notes	for other sensors please request



## AGS55+

### Highlights

#### Hinged lid enclosure USE

The AGS55+ will be delivered with our newest innovation from our enclosure range. The hinged lid enclosure makes simple wiring possible without any additionally required assembly tools. For more flexibility the modular design of the enclosure offers the possibility of exchanging individual components (e.g. cable entry).

#### Mounting

The mounting base, which is included in delivery, permits the simple clipping on of the enclosure and guarantees the thermal separation of the mounting location and the sensor.

#### Thought out in all details

The decisive detail is the removable cable entry of USE: in combination with the removable plug-in terminal it allows the quick and easy wiring through the opening – comfortable pre-assembly included. The practical hinged cover with its quick-release feature cannot be lost and thus is always there where it belongs.

The additional lock with (only) one screw is also possible for special applications.

Item description: product | sensor

Outdoor sensor -35...+90 °C – passive			TP2
Item description	Item no.	On stock	€
AGS55+ PT100	622998	☹	32,50
AGS55+ PT100 1/3 DIN	623001		36,20
AGS55+ PT1000	623018	☹	34,70
AGS55+ PT1000 1/3 DIN	622943		37,70
AGS55+ Ni1000	622967	☹	34,40
AGS55+ Ni1000TK5000	622974	☹	37,90
AGS55+ NTC10k	622950	☹	31,20
AGS55+ NTC10k Precon	623025		31,20
AGS55+ NTC5k	624268		31,20
AGS55+ NTC20k	623032	☹	31,20
AGS55+ NTC1,8k	645812	☹	31,20
AGS55+ LM235Z	622981	☹	32,00
AGS55+ KTY81-110	623049		29,10
AGS55+ KTY81-121	623056		29,10
AGS55+ KTY81-122	623063		29,10
AGS55+ KTY81-210	623070		29,10

Options	
Item description	€
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

Order example for different items:

**AGS55+ | FeT**

**AGS55+** = product

**FeT** = sensor



## AGS55+

Item description: product | TRV/TRA MultiRange

Outdoor sensor (opt. with display) temperature – active 0..10 V   4..20 mA   relay				TP2
Item description	USEapp	Item no.	On stock	€
AGS55+ TRV MultiRange		623087	⊕	75,30
AGS55+ TRA MultiRange		623094	⊕	75,30
AGS55+ TRV MultiRange relay	✓	663069		114,30
AGS55+ LCD TRV MultiRange	✓	658614		115,00
AGS55+ LCD TRA MultiRange	✓	658621		115,00
AGS55+ LCD TRV MultiRange relay	✓	663076		154,00

Item description: product | BUS



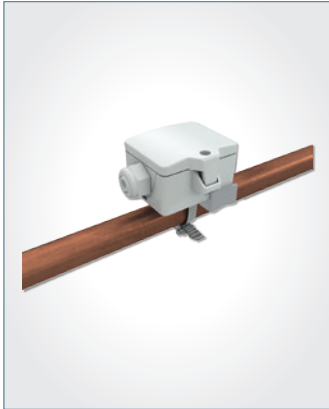
Outdoor sensor (opt. with display) temperature – active BUS				TP2
Item description	USEapp	Item no.	On stock	€
AGS54 ext. LON		25775		186,60
AGS55+ RS485 Modbus	✓	658584		105,30
AGS55+ LCD RS485 Modbus	✓	658607		145,00

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	⊕	4,60	
Mounting base enclosure USE-S pure white	667722	⊕	5,50	
Mounting base enclosure USE-M pure white	668354	⊕	7,85	
Rawlplugs and screws (2 pcs. each)	102209	⊕	0,80	
Sun/rain protection RS150	103329	⊕	22,70	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊕	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"



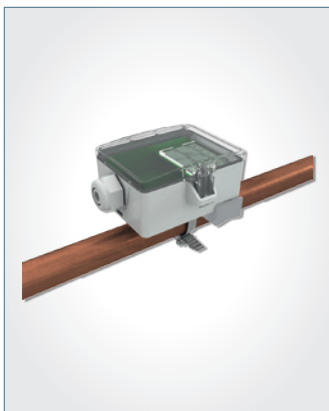
AGS54 ext. LON



VFG54+ passive / TRV / TRA



VFG54+ RS485 Modbus / relay



VFG54+ LCD

## VFG54+

Sensor with hinged lid enclosure USE for temperature measurement of pipes and round surfaces. Spring loaded brass contact sensor.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V, LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Output switch contact	floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) TRV   LON: 15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,42 W (24 V =)   0,84 VA (24 V ~) TRA: typ. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer -50..+50   -20..+80   -15..+35   -10..+120   0..+50   0..+100   0..+160   0..250 °C default setting: 0..+100 °C LON: -45..+130 °C, RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: depending on used sensor
Accuracy temperature	measuring current typ. <1 mA ±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Display	LCD 29x35 mm with RGB backlight
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm LON: seal insert for double cable entry for wire max. Ø=6 mm LCD: M20 for wire max. Ø=8 mm removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup> passive: 2-wire (default), 3-wire or 4-wire TRV: 3-wire, TRA: 2-wire LON/RS485 Modbus: 4-wire
Pocket	brass, spring loaded sensor
Ambient condition	enclosure: -35..+70 °C max. 85% rH short term condensation



## VFG54+

	enclosure passive: -35..+90 °C, max. 85% rH short term condensation
Mounting	NEW: installation possible in or across the direction of the pipe LON: Use tightening straps for installation
Notes	for other sensors please request

## Highlights

### Hinged lid enclosure USE

The VFG54+ will be delivered with our newest innovation from our enclosure range. The hinged lid enclosure makes simple wiring possible without any additionally required assembly tools. For more flexibility the modular design of the enclosure offers the possibility of exchanging individual components (e.g. cable entry).

### Mounting

The mounting base, which is included in delivery, permits the simple clipping on of the enclosure and guarantees the thermal separation of the mounting location and the sensor.

### Thought out in all details

The decisive detail is the removable cable entry of USE: in combination with the removable plug-in terminal it allows the quick and easy wiring through the opening – comfortable pre-assembly included. The practical hinged cover with its quick-release feature cannot be lost and thus is always there where it belongs. The additional lock with (only) one screw is also possible for special applications.

Contact sensor temperature – passive			TP3
Item description	Item no.	On stock	€
VFG54+ PT100	620642	●	18,60
VFG54+ PT100 1/3 DIN	620659		22,40
VFG54+ PT1000	620666	●	20,80
VFG54+ PT1000 1/3 DIN	620598		23,80
VFG54+ Ni1000	620611	●	20,50
VFG54+ Ni1000TK5000	620628	●	24,10
VFG54+ NTC10k	620604	●	17,30
VFG54+ NTC10k Precon	620673		17,30
VFG54+ NTC5k	624244		17,30
VFG54+ NTC20k	620680	●	17,30
VFG54+ NTC1,8k	643832	●	17,30
VFG54+ LM235Z	620635	●	19,90
VFG54+ KTY81-110	620697		15,30
VFG54+ KTY81-121	620703		15,30
VFG54+ KTY81-122	620710		15,30
VFG54+ KTY81-210	620727		15,30
VFG54+ DS18B20 1-wire	620734		18,60

Options	
Item description	€
Add to price of NTC10k for sensor NTC10k Carel	0,00
Add to price of PT100 for sensor FeT	19,25

## VFG54+

Item description: product | TRV/TRA MultiRange

Contact sensors (opt. with display) temperature – active 0..10 V   4..20 mA   relay				TP2
Item description	USEapp	Item no.	On stock	€
VFG54+ TRV MultiRange		620741	⊖	71,70
VFG54+ TRA MultiRange		620758	⊖	71,70
VFG54+ TRV MultiRange relay	✓	662994		110,70
VFG54+ LCD TRV MultiRange	✓	663014		111,40
VFG54+ LCD TRA MultiRange	✓	663021		111,40
VFG54+ LCD TRV MultiRange relay	✓	663038		140,70

Item description: product | TRV/TRA MultiRange



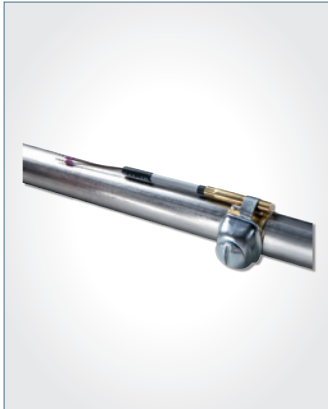
Contact sensors (opt. with display) temperature – active BUS				TP2
Item description	USEapp	Item no.	On stock	€
VFG54 LON		98144		173,20
VFG54+ RS485 Modbus	✓	663045		113,70
VFG54+ LCD RS485 Modbus	✓	663052		162,70

Accessories				AS1
Item description	Item no.	On stock	€	
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	⊖	1,65	
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	⊖	3,10	
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	⊖	1,65	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"



VFG54 LON



AF25 passive



AF25+ TRV/TRA

## AF25

Sensor for temperature measurement of pipes and round surfaces. Designed for control and monitoring applications. Active models replace AF25 in enclosure USE-S.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV8   TRA8: -15..+35 °C passive: depending on used sensor
Accuracy temperature	depending on length of connection wire TRV   TRA: ±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active)
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> (only active) connection wire PVC, 2x Ø=0,25 mm <sup>2</sup> , grey sensor wire active silicone, Ø=25 mm 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	brass, Ø=6 mm, mounting length 35 mm
Ambient condition	-35..+100 °C max. 85% rH short term condensation enclosure TRV/TRA: -35..+70 °C, max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	other sensors and cable lengths on request



## AF25

Item description: product | sensor | temperaure | cable length (L)

Contact sensor -35..+100 °C – passive			TP3
Item description	Item no.	€	
AF25 PT100 T100 L1000	81610	12,80	
AF25 PT100 1/3 DIN T100 L1000	46411	16,60	
AF25 PT1000 T100 L1000	54263	15,00	
AF25 PT1000 1/3 DIN T100 L1000	54300	18,00	
AF25 Ni1000 T100 L1000	54348	14,70	
AF25 Ni1000TK5000 T100 L1000	54386	18,20	
AF25 NTC10k T100 L1000	92005	11,50	
AF25 NTC10k Precon T100 L1000	92043	11,50	
AF25 NTC5k T100 L1000	54461	11,50	
AF25 NTC20k T100 L1000	141994	11,50	
AF25 NTC1,8k T100 L1000	241687	11,50	

Options		€
Item description	€	
Add per meter of connection cable -35..+100 °C	0,70	
Add per meter of connection cable -50..+135 °C	1,60	
Temperature -50..+135 °C	3,75	
Add to price of NTC10k for sensor NTC10k Carel	0,00	

Order example for different items:

**AF25 | PT1000 1/3 DIN | T135 | L2000**

**AF25** = product

**PT1000 1/3 DIN** = sensor

**T135** = temperature -50..135 °C

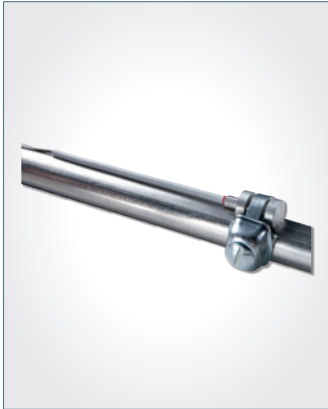
**L2000** = cable length (mm)

Item description: product | TRV/TRA MultiRange | temperature | cable length (L)

Contact sensors -50..+135 °C – active 0..10 V   4..20 mA			TP2
Item description	Item no.	€	
AF25+ TRV MultiRange T135 L1000	658751	70,80	
AF25+ TRA MultiRange T135 L1000	658768	70,80	

Options		€
Item description	€	
Add per meter of connection cable -50..+135 °C	1,60	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	☺	4,60	
Mounting base enclosure USE-S pure white	667722	☺	5,50	
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	☺	1,65	
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	☺	3,10	
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	☺	1,65	
For cable entries and sealing inserts please refer to chapter "Accessories"				



PR25 passive



PR25+ TRV/TRA

## PR25

Sensor for temperature measurement of pipes and round surfaces. Designed for control and monitoring applications. Active models replace PR25 in enclosure USE-S.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 5 k $\Omega$
Output Amp	TRA: 1x 4..20 mA, max. load 500 $\Omega$
Power supply	TRV: 15..24 V = ( $\pm$ 10%) or 24 V ~ ( $\pm$ 10%) TRA: 15..24 V = ( $\pm$ 10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV8   TRA8: -15..+35 °C passive: depending on used sensor
Accuracy temperature	depending on length of connection wire TRV   TRA: $\pm$ 1% of measuring range (typ. at 21 °C) with sensor wire max. 2 m passive: typ. $\pm$ 0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active)
Protection	IP65 according to EN 60529, SI-Protection
Cable entry	M16 for wire max. $\varnothing$ =8 mm, removable (only active)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> (only active) connection wire PVC, 2x $\varnothing$ =0,25 mm <sup>2</sup> , grey sensor wire active silicone, $\varnothing$ =25 mm 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	aluminium, $\varnothing$ =11 mm, mounting length 28 mm
Ambient condition	-35..+100 °C enclosure: -35..+70 °C max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	other sensors and cable lengths on request



## PR25

Item description: product | sensor | cable length (L)

Sensor for pipes and round surfaces -35..+100 °C – passive			TP2
Item description	Item no.	€	
PR25 PT100 T100 L1000	81696	18,20	
PR25 PT100 1/3 DIN T100 L1000	94771	21,90	
PR25 PT1000 T100 L1000	94894	20,40	
PR25 PT1000 1/3 DIN T100 L1000	94931	23,30	
PR25 Ni1000 T100 L1000	94979	20,10	
PR25 Ni1000TK5000 T100 L1000	95686	23,60	
PR25 NTC10k T100 L1000	95808	16,90	
PR25 NTC10k Precon T100 L1000	95846	16,90	
PR25 NTC5k T100 L1000	95761	16,90	
PR25 NTC20k T100 L1000	362641	16,90	
PR25 NTC1,8k T100 L1000	287128	16,90	
PR25 LM235Z T100 L1000	96089	18,60	
PR25 KTY81-110 T100 L1000	95884	14,80	
PR25 KTY81-121 T100 L1000	95921	14,80	
PR25 KTY81-210 T100 L1000	96003	14,80	

Options		€
Item description		€
Temperature -50..+180 °C		3,75
Add per meter of connection cable -35..+100 °C		0,70
Add per meter of connection cable -50..+180 °C		1,60
Add to price of NTC10k for sensor NTC10k Carel		0,00

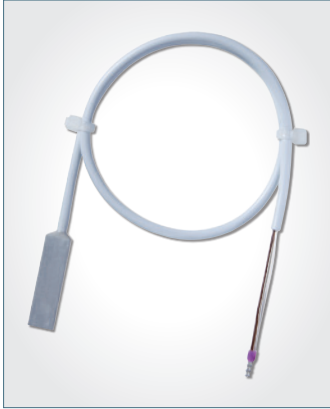
Item description: product | TRV/TRA | cable length (L)

Contact sensors -50..+180 °C – active 0..10 V   4..20 mA			TP2
Item description	Item no.	€	
PR25+ TRV MultiRange T180 L1000	658782	74,20	
PR25+ TRA MultiRange T180 L1000	658799	74,20	

Options		€
Item description		€
Add per meter of connection cable -50..+180 °C		1,60

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	☹	4,60	
Mounting base enclosure USE-S pure white	667722	☹	5,50	
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	☹	1,65	
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	☹	3,10	
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	☹	1,65	
For cable entries and sealing inserts please refer to chapter "Accessories"				





OF14 passive



OF14+ TRV/TRA

## OF14

Sensor for temperature measurement on glass surfaces or similar. Designed for control and monitoring applications. Active models replace OF14 in enclosure USE-S.

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V, min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Power supply	TRV: 15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%)
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV3   TRA3: 0..+50 °C passive: depending on used sensor
Accuracy temperature	TRV   TRA: ±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Sensor	passive: 2-wire (standard), 3-wire or 4-wire
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active)
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm, removable (only active)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> (only active) connection wire PVC, 2x Ø=0,25 mm <sup>2</sup> , grey sensor wire active silicone, Ø=25 mm 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pocket	aluminium, dimensions: 35x10x6 mm
Ambient condition	-35..+70 °C max. 85% rH short term condensation
Mounting	surface mounting with adhesive strip (included), screw mounted possible using version with bore hole
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	other sensors and cable lengths on request

## OF14

Item description: product | sensor | cable length (L)

Contact sensor -35..+70 °C – passive			TP2
Item description	Item no.	€	
OF14 PT100 L1000	132596	31,30	
OF14 PT100 1/3 DIN L1000	167307	35,10	
OF14 PT1000 L1000	114851	33,50	
OF14 PT1000 1/3 DIN L1000	219303	36,50	
OF14 Ni1000 L1000	113922	33,20	
OF14 Ni1000TK5000 L1000	141864	36,70	
OF14 NTC10k L1000	190367	30,10	
OF14 NTC10k Precon L1000	165006	30,10	
OF14 NTC5k L1000	351263	30,10	
OF14 NTC20k L1000	147736	30,10	
OF14 NTC 1,8k L1000	356541	30,10	
OF14 LM235Z L1000	216760	31,80	

Options		€
Item description		€
Add per meter of connection cable -35..+100 °C		0,70
Add to price of NTC10k for sensor NTC10k Carel		0,00

Order example for different items:

**OF14 | NTC1,8k | L2000**

**OF14** = product

**NTC1,8k** = sensor

**L2000** = cable length (mm)

Item description: product | TRV3/TRA3 | cable length (L)

Contact sensors 0..+50 °C – active 0..10 V   4..20 mA			TP2
Item description	Item no.	€	
OF14+ TRV3 L1000	658812	88,10	
OF14+ TRA3 L1000	658836	88,10	

Options		€
Item description		€
Add per meter of connection cable -35..+100 °C		0,70

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	☹	4,60	
Mounting base enclosure USE-S pure white	667722	☹	5,50	
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	☹	1,65	
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	☹	3,10	
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	☹	1,65	
For cable entries and sealing inserts please refer to chapter "Accessories"				



TF14 passive



TF14+ TRV/TRA



## TF14

Cable sensor for temperature measurement for HVAC applications. In conjunction with a Thermowell pocket suitable temperature measurement in immersion temperature applications. Designed for control and monitoring applications. Active models replace TF14 in enclosure USE-S.

TECHNICAL DATA	
Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V, min. load 5 k $\Omega$
Output Amp	TRA: 1x 4..20 mA, max. load 500 $\Omega$
Power supply	TRV: 24 V = or 24 V ~ ( $\pm 20\%$ ) TRA: 15..24 V = ( $\pm 10\%$ )
Power consumption	TRV: typ. 0,4 W (24 V =)   0,8 VA (24 V ~) TRA: typ. 0,5 W (24 V =)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C TRV2   TRA2: -10..+120 °C TRV3   TRA3: 0..+50 °C TRV4   TRA4: 0..+160 °C TRV5   TRA5: 0..+250 °C TRV8   TRA8: -15..+35 °C passive: depending on used sensor
Accuracy temperature	TRV   TRA: $\pm 1\%$ of measuring range (typ. at 21 °C) passive: typ. $\pm 0,3$ K (typ. at 21 °C), depending on used sensor
Enclosure	enclosure USE-S, PC, pure white with removable cable entry (only active)
Protection	IP54 according to EN 60529, SI-Protection hex pressed Rolled: IP67 according to EN 60529, with SI-Protection enclosure (active): IP65 according to EN 60529
Cable entry	M16 for wire max. $\varnothing=8$ mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> (only active)
Pocket	stainless steel V4A, $\varnothing=4$ mm mounting length: 50   100   150   200   400 mm
Ambient condition	enclosure TRV/TRA: -35..+70 °C, max. 85% rH short term condensation with connection wire PVC -35..+100 °C silicone -50..+180 °C PTFE -80..+260 °C
Delivery contents	incl. mounting base enclosure USE-S pure white
Notes	for other sensors please request other probe lengths on request

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF14

Cable sensors -35..+100 °C – PT100			TP3
Item description	Item no.	€	
TF14 PT100 T100 050.04 L1000	64347	12,20	
TF14 PT100 T100 100.04 L1000	57554	13,30	
TF14 PT100 T100 150.04 L1000	57561	13,70	

Cable sensors -35..+100 °C – PT1000			TP3
Item description	Item no.	€	
TF14 PT1000 T100 050.04 L1000	69267	14,40	
TF14 PT1000 T100 100.04 L1000	69274	15,50	
TF14 PT1000 T100 150.04 L1000	69281	15,90	

Cable sensors -35..+100 °C – Ni1000			TP3
Item description	Item no.	€	
TF14 Ni1000 T100 050.04 L1000	73080	14,10	
TF14 Ni1000 T100 100.04 L1000	73097	15,30	
TF14 Ni1000 T100 150.04 L1000	73103	15,60	

Cable sensors -35..+100 °C – NTC10k			TP3
Item description	Item no.	€	
TF14 NTC10k T100 050.04 L1000	73844	10,90	
TF14 NTC10k T100 100.04 L1000	73851	12,00	
TF14 NTC10k T100 150.04 L1000	73868	12,30	

Cable sensors -35..+100 °C – NTC5k			TP3
Item description	Item no.	€	
TF14 NTC5k T100 050.04 L1000	73806	10,90	
TF14 NTC5k T100 100.04 L1000	73813	12,00	
TF14 NTC5k T100 150.04 L1000	73820	12,30	

Cable sensors -35..+100 °C – NTC1,8k			TP3
Item description	Item no.	€	
TF14 NTC1,8k T100 050.04 L1000	270687	10,90	
TF14 NTC1,8k T100 100.04 L1000	355797	12,00	
TF14 NTC1,8k T100 150.04 L1000	233293	12,30	

Options		€
Item description		€
Add per meter of connection cable 2-wire -35..+100 °C		0,70
Protection class IP67		2,00
Add to price of NTC10k for sensor NTC10k Carel		0,00

Cable sensors -35..+100 °C PT100 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT100 1/3 DIN T100 050.04 L1000	69106	15,90	
TF14 PT100 1/3 DIN T100 100.04 L1000	69113	17,10	
TF14 PT100 1/3 DIN T100 150.04 L1000	69120	17,40	

Cable sensors -35..+100 °C – PT1000 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT1000 1/3 DIN T100 050.04 L1000	69427	17,40	
TF14 PT1000 1/3 DIN T100 100.04 L1000	69434	18,50	
TF14 PT1000 1/3 DIN T100 150.04 L1000	69441	18,80	

Cable sensors -35..+100 °C – Ni1000TK5000			TP3
Item description	Item no.	€	
TF14 Ni1000TK5000 T100 050.04 L1000	73240	17,60	
TF14 Ni1000TK5000 T100 100.04 L1000	73257	18,70	
TF14 Ni1000TK5000 T100 150.04 L1000	73264	19,10	

Cable sensors -35..+100 °C – NTC10k Precon			TP3
Item description	Item no.	€	
TF14 NTC10k Precon T100 050.04 L1000	77002	10,90	
TF14 NTC10k Precon T100 100.04 L1000	77019	12,00	
TF14 NTC10k Precon T100 150.04 L1000	77026	12,30	

Cable sensors -35..+100 °C – NTC20k			TP3
Item description	Item no.	€	
TF14 NTC20k T100 050.04 L1000	73899	10,90	
TF14 NTC20k T100 100.04 L1000	73905	12,00	
TF14 NTC20k T100 150.04 L1000	73912	12,30	

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF14

Cable sensors -50..+180 °C – PT100			TP3
Item description	Item no.	€	
TF14 PT100 T180 050.04 L1000	64354	16,90	
TF14 PT100 T180 100.04 L1000	78009	18,00	
TF14 PT100 T180 150.04 L1000	78016	18,30	

Cable sensors -50..+180 °C – PT1000			TP3
Item description	Item no.	€	
TF14 PT1000 T180 050.04 L1000	78405	19,00	
TF14 PT1000 T180 100.04 L1000	78443	20,20	
TF14 PT1000 T180 150.04 L1000	78481	20,50	

Cable sensors -50..+180 °C – Ni1000			TP3
Item description	Item no.	€	
TF14 Ni1000 T180 050.04 L1000	78795	18,70	
TF14 Ni1000 T180 100.04 L1000	78832	19,90	
TF14 Ni1000 T180 150.04 L1000	78870	20,20	

Cable sensors -50..+150 °C – NTC10k			TP3
Item description	Item no.	€	
TF14 NTC10k T150 050.04 L1000	80408	15,50	
TF14 NTC10k T150 100.04 L1000	81443	16,60	
TF14 NTC10k T150 150.04 L1000	80484	17,00	

Cable sensors -50..+150 °C – NTC5k			TP3
Item description	Item no.	€	
TF14 NTC5k T150 050.04 L1000	80200	15,50	
TF14 NTC5k T150 100.04 L1000	80248	16,60	
TF14 NTC5k T150 150.04 L1000	76975	17,00	

Cable sensors -50..+150 °C – NTC1,8k			TP3
Item description	Item no.	€	
TF14 NTC1,8k T150 050.04 L1000	256131	15,50	
TF14 NTC1,8k T150 100.04 L1000	352307	16,60	
TF14 NTC1,8k T150 150.04 L1000	352291	17,00	

Options		€
Item description		€
Add per meter of connection cable -50..+180 °C		1,60
Protection class IP67		2,00
Add to price of NTC10k for sensor NTC10k Carel		0,00

Cable sensors -50..+180 °C – PT100 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT100 1/3 DIN T180 050.04 L1000	78207	20,50	
TF14 PT100 1/3 DIN T180 100.04 L1000	78214	21,70	
TF14 PT100 1/3 DIN T180 150.04 L1000	78221	22,00	

Cable sensors -50..+180 °C – PT1000 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT1000 1/3 DIN T180 050.04 L1000	78603	22,00	
TF14 PT1000 1/3 DIN T180 100.04 L1000	78641	23,20	
TF14 PT1000 1/3 DIN T180 150.04 L1000	78689	23,50	

Cable sensors -50..+180 °C – Ni1000TK5000			TP3
Item description	Item no.	€	
TF14 Ni1000TK5000 T180 050.04 L1000	78993	22,20	
TF14 Ni1000TK5000 T180 100.04 L1000	79037	23,30	
TF14 Ni1000TK5000 T180 150.04 L1000	79075	23,70	

Cable sensors -50..+150 °C – NTC10k Precon			TP3
Item description	Item no.	€	
TF14 NTC10k Precon T150 050.04 L1000	76807	15,50	
TF14 NTC10k Precon T150 100.04 L1000	76845	16,60	
TF14 NTC10k Precon T150 150.04 L1000	76883	17,00	

Cable sensors -50..+150 °C – NTC20k			TP3
Item description	Item no.	€	
TF14 NTC20k T150 050.04 L1000	80606	15,50	
TF14 NTC20k T150 100.04 L1000	80644	16,60	
TF14 NTC20k T150 150.04 L1000	80682	17,00	

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF14

Cable sensors -80..+260 °C – PT100			TP3
Item description	Item no.	€	
TF14 PT100 T260 050.04 L1000	95563	19,10	
TF14 PT100 T260 100.04 L1000	96126	20,20	
TF14 PT100 T260 150.04 L1000	96195	20,50	

Cable sensors -80..+260 °C – PT100 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT100 1/3 DIN T260 050.04 L1000	96775	22,80	
TF14 PT100 1/3 DIN T260 100.04 L1000	96805	23,90	
TF14 PT100 1/3 DIN T260 150.04 L1000	96843	24,20	

Cable sensors -80..+260 °C – PT1000			TP3
Item description	Item no.	€	
TF14 PT1000 T260 050.04 L1000	97185	21,30	
TF14 PT1000 T260 100.04 L1000	97239	22,40	
TF14 PT1000 T260 150.04 L1000	91510	22,70	

Cable sensors -80..+260 °C – PT1000 1/3 DIN			TP3
Item description	Item no.	€	
TF14 PT1000 1/3 DIN T260 050.04 L1000	91633	24,30	
TF14 PT1000 1/3 DIN T260 100.04 L1000	91671	25,40	
TF14 PT1000 1/3 DIN T260 150.04 L1000	91718	25,70	

Cable sensors -80..+260 °C – Ni1000			TP3
Item description	Item no.	€	
TF14 Ni1000 T260 050.04 L1000	91831	21,00	
TF14 Ni1000 T260 100.04 L1000	91879	22,10	
TF14 Ni1000 T260 150.04 L1000	91916	22,40	

Cable sensors -80..+260 °C – Ni1000TK5000			TP3
Item description	Item no.	€	
TF14 Ni1000TK5000 T260 050.04 L1000	97338	24,50	
TF14 Ni1000TK5000 T260 100.04 L1000	97376	25,60	
TF14 Ni1000TK5000 T260 150.04 L1000	97413	25,90	

Options		€
Item description		
3-wire connection -80..+260 °C (3-wire)		1,65
4-wire connection -80..+260 °C (4-wire)		2,50
Add per meter of connection cable 2-wire -80..+260 °C		2,65
Add per meter of connection cable 3-wire -80..+260 °C		3,10
Add per meter of connection cable 4-wire -80..+260 °C		5,00

Order example for different items:

**TF14 | NTC1,8k | T180 | 150.04 | L3000 | 3-wire | IP67**

**TF14** = product  
**NTC1,8k** = sensor  
**T180** = temperature  
**150.04** = pocket (length.Ø)  
**L3000** = cable length (mm)  
**3-wire** = number of wires  
**IP67** = protection IP67

Item description: product | TRV/TRA MultiRange | temperature | pocket (length.Ø) | cable length (L)

## TF14

Cable sensors -50..+160 °C – active TRV 0..10 V			TP2
Item description	Item no.	€	
TF14+ TRV MultiRange T160 050.04 L1000	658850	68,70	
TF14+ TRV MultiRange T160 100.04 L1000	658867	70,10	
TF14+ TRV MultiRange T160 150.04 L1000	658874	70,50	

Cable sensors -50..+160 °C – active TRA 4..20 mA			TP2
Item description	Item no.	€	
TF14+ TRA MultiRange T160 050.04 L1000	658881	68,70	
TF14+ TRA MultiRange T160 100.04 L1000	658898	70,10	
TF14+ TRA MultiRange T160 150.04 L1000	658904	70,50	

Options		
Item description	€	
TRV/TRA: Temperature -80..+260 °C (T260)	10,90	
TRV/TRA: Add per meter of connection for measuring range up to 160 °C	1,60	
TRV/TRA: Add per meter of connection for measuring range up to 260 °C	2,65	

Order example for different items:

**TF14+ | TRV MultiRange | T260 | 150.04 | L3000**

**TF14+** = product  
**TRV MultiRange** = output  
**T260** = temperature  
**150.04** = pocket (length.Ø)  
**L3000** = cable length (mm)

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting clip enclosure USE-S pure white	667739	⊕	4,60	
Mounting base enclosure USE-S pure white	667722	⊕	5,50	
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	⊕	6,30	
Mounting flange MF4 (brass)	102438	⊕	5,10	
KL4VA – Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	⊕	12,70	

For cable entries and sealing inserts please refer to chapter "Accessories"



TF25 passive



TF25+ TRV/TRA



TF25+ RS485 Modbus

## TF25

Cable sensor for temperature measurement in HVAC applications. In conjunction with a Thermowell pocket suitable for temperature measurement in duct applications. Designed for control and monitoring applications. Replaces TF25 in enclosure USE-S (active/passive) resp. in the newly developed enclosure USE-M (LCD/relay/RS485 Modbus; LON; enclosure PA6, pure white, with quick lock screws).

### TECHNICAL DATA

Measuring values	temperature
Output voltage	passive: depending on used sensor TRV: 1x 0..10 V or 0..5 V LCD/relay: 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) min. load 5 kΩ
Output Amp	TRA: 1x 4..20 mA, max. load 500 Ω
Network technology	LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) TRV   LON: 15..24 V = (±10%) or 24 V ~ (±10%) TRA: 15..24 V = (±10%)
Power consumption	TRV: max. 0,45 W (24 V =)   0,8 VA (24 V ~) TRA: max. 0,5 W (24 V =) LON: typ. 0,5 W (24 V =)   1,7 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	TRV   TRA: adjustable at the transducer TRV1   TRA1: -50..+50 °C, TRV2   TRA2: -10..+120 °C, TRV3   TRA3: 0..+50 °C, TRV4   TRA4: 0..+160 °C, TRV8   TRA8: -15..+35 °C LON: -45..+130 °C RS485 Modbus: -20..+120 °C LCD/relay: optionally configured via Thermokon USEapp passive: depending on used sensor
Working range temp.	passive: depending on used sensor 400 °C (optional) active: -50..160 °C
Accuracy temperature	±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) RS485 Modbus: ±1 °C (typ. at 25 °C)
Sensor	passive: 2-wire (standard), 3-wire or 4-wire sensor cable: 1   2   4   6 m
Display	LCD 29x35 mm with RGB backlight, warning when measuring range is exceeded ('OL') or sensor is defective/disconnected ('check sensor') (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M, PC pure white (only active) LON: PA6, pure white, with quick lock screws
Protection	IP54 according to EN 60529, SI-Protection hex pressed Rolled: IP67 according to EN 60529, with SI-Protection enclosure (active): IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm LON: M20 for wire max. Ø=8 mm





## TF25

	seal insert for double cable entry for wire max $\varnothing=6$ mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup> (only active)
Pocket	stainless steel V4A, $\varnothing=6$ mm LON: $\varnothing=6,5$ mm mounting length: 50   100   150   200   250 mm tension spring (optional)
Ambient condition	enclosure: -35..+70 °C max. 85% rH short term condensation with connection wire PVC -35..+100 °C, silicone -50..+180 °C, PTFE -80..+260 °C, GI/GI-V2A: -50..+400 °C
Delivery contents	incl. mounting base enclosure USE-S pure white LCD/BUS/relay: incl. mounting base enclosure USE-M pure white
Notes	cable ends with conductor sleeves as standard other sensors and cable lengths on request PE connection wire available (please request)

Item description: product | sensor | temperature | pocket (length. $\varnothing$ ) | cable length (L)

Cable sensors -35..+100 °C – PT100		TP3
Item description	Item no.	€
TF25 PT100 T100 050.06 L1000	35019	11,80
TF25 PT100 T100 100.06 L1000	35026	13,20
TF25 PT100 T100 150.06 L1000	35033	13,60

Cable sensors -35..+100 °C PT100 1/3 DIN		TP3
Item description	Item no.	€
TF25 PT100 1/3 DIN T100 050.06 L1000	25799	15,50
TF25 PT100 1/3 DIN T100 100.06 L1000	35255	16,90
TF25 PT100 1/3 DIN T100 150.06 L1000	35262	17,20

Cable sensors -35..+100 °C – PT1000		TP3
Item description	Item no.	€
TF25 PT1000 T100 050.06 L1000	35484	14,00
TF25 PT1000 T100 100.06 L1000	35491	15,40
TF25 PT1000 T100 150.06 L1000	35507	15,70

Cable sensors -35..+100 °C – PT1000 1/3 DIN		TP3
Item description	Item no.	€
TF25 PT1000 1/3 DIN T100 050.06 L1000	35729	17,00
TF25 PT1000 1/3 DIN T100 100.06 L1000	35736	18,40
TF25 PT1000 1/3 DIN T100 150.06 L1000	35743	18,70

Cable sensors -35..+100 °C – Ni1000		TP3
Item description	Item no.	€
TF25 Ni1000 T100 050.06 L1000	26116	13,70
TF25 Ni1000 T100 100.06 L1000	26154	15,10
TF25 Ni1000 T100 150.06 L1000	26192	15,40

Cable sensors -35..+100 °C – Ni1000TK5000		TP3
Item description	Item no.	€
TF25 Ni1000TK5000 T100 050.06 L1000	26352	17,20
TF25 Ni1000TK5000 T100 100.06 L1000	26390	18,60
TF25 Ni1000TK5000 T100 150.06 L1000	388238	18,90

Cable sensors -35..+100 °C – NTC10k		TP3
Item description	Item no.	€
TF25 NTC10k T100 050.06 L1000	41539	10,50
TF25 NTC10k T100 100.06 L1000	41812	11,90
TF25 NTC10k T100 150.06 L1000	40723	12,20

Cable sensors -35..+100 °C – NTC10k Precon		TP3
Item description	Item no.	€
TF25 NTC10k Precon T100 050.06 L1000	41300	10,50
TF25 NTC10k Precon T100 100.06 L1000	41348	11,90
TF25 NTC10k Precon T100 150.06 L1000	41386	12,20

Cable sensors -35..+100 °C – NTC5k		TP3
Item description	Item no.	€
TF25 NTC5k T100 050.06 L1000	41522	10,50
TF25 NTC5k T100 100.06 L1000	41805	11,90
TF25 NTC5k T100 150.06 L1000	40716	12,20

Cable sensors -35..+100 °C – NTC20k		TP3
Item description	Item no.	€
TF25 NTC20k T100 050.06 L1000	41546	10,50
TF25 NTC20k T100 100.06 L1000	41829	11,90
TF25 NTC20k T100 150.06 L1000	40730	12,20

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF25

Cable sensors -35..+100 °C – NTC1,8k			TP3
Item description	Item no.	€	
TF25 NTC1,8k T100 050.06 L1000	233309	10,50	
TF25 NTC1,8k T100 100.06 L1000	258272	11,90	
TF25 NTC1,8k T100 150.06 L1000	319201	12,20	

Cable sensors -35..+100 °C – KTY81-110			TP3
Item description	Item no.	€	
TF25 KTY81-110 T100 050.06 L1000	42819	8,35	
TF25 KTY81-110 T100 100.06 L1000	42857	9,80	
TF25 KTY81-110 T100 150.06 L1000	42895	10,10	

Cable sensors -35..+100 °C – KTY81-122			TP3
Item description	Item no.	€	
TF25 KTY81-122 T100 050.06 L1000	42833	8,35	
TF25 KTY81-122 T100 100.06 L1000	42871	9,80	
TF25 KTY81-122 T100 150.06 L1000	42918	10,10	

Cable sensors -35..+100 °C – DS18B20 1-wire			TP2
Item description	Item no.	€	
TF25 DS18B20 1-wire T100 050.06 L1000	496735	11,80	
TF25 DS18B20 1-wire T100 100.06 L1000	592901	13,20	
TF25 DS18B20 1-wire T100 150.06 L1000	592918	13,60	

Options		€
Item description		
3-wire connection -35..+100 °C (3-wire)		1,65
4-wire connection -35..+100 °C (4-wire)		2,50
Add per meter of connection cable 2-wire -35..+100 °C		0,70
Add per meter of connection cable 3-wire -35..+100 °C		1,00
Add per meter of connection cable 4-wire -35..+100 °C		1,20
Protection class IP67		2,00
Tension spring (tensp)		1,30
Connection box with 2 cable entries (connbox)		13,80
Add to price of NTC10k for sensor NTC10k Carel		0,00

Cable sensors -50..+180 °C – PT100			TP3
Item description	Item no.	€	
TF25 PT100 T180 050.06 L1000	52771	15,50	
TF25 PT100 T180 100.06 L1000	52788	16,90	
TF25 PT100 T180 150.06 L1000	52795	17,20	

Cable sensors -50..+180 °C – PT1000			TP3
Item description	Item no.	€	
TF25 PT1000 T180 050.06 L1000	58247	17,70	
TF25 PT1000 T180 100.06 L1000	58254	19,10	
TF25 PT1000 T180 150.06 L1000	58261	19,40	

Cable sensors -35..+100 °C – LM235Z			TP3
Item description	Item no.	€	
TF25 LM235Z T100 050.06 L1000	43786	13,10	
TF25 LM235Z T100 100.06 L1000	43823	14,50	
TF25 LM235Z T100 150.06 L1000	43861	14,90	

Cable sensors -35..+100 °C – KTY81-121			TP3
Item description	Item no.	€	
TF25 KTY81-121 T100 050.06 L1000	42826	8,35	
TF25 KTY81-121 T100 100.06 L1000	42864	9,80	
TF25 KTY81-121 T100 150.06 L1000	42901	10,10	

Cable sensors -35..+100 °C – KTY81-210			TP3
Item description	Item no.	€	
TF25 KTY81-210 T100 050.06 L1000	42840	8,35	
TF25 KTY81-210 T100 100.06 L1000	42888	9,80	
TF25 KTY81-210 T100 150.06 L1000	42925	10,10	

Cable sensors -50..+180 °C – PT100 1/3 DIN			TP3
Item description	Item no.	€	
TF25 PT100 1/3 DIN T180 050.06 L1000	57493	19,20	
TF25 PT100 1/3 DIN T180 100.06 L1000	57509	20,70	
TF25 PT100 1/3 DIN T180 150.06 L1000	57516	21,00	

Cable sensors -50..+180 °C – PT1000 1/3 DIN			TP3
Item description	Item no.	€	
TF25 PT1000 1/3 DIN T180 050.06 L1000	58483	20,70	
TF25 PT1000 1/3 DIN T180 100.06 L1000	58490	22,10	
TF25 PT1000 1/3 DIN T180 150.06 L1000	58506	22,40	

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF25

Cable sensors -50..+180 °C – Ni1000			TP3
Item description	Item no.	€	
TF25 Ni1000 T180 050.06 L1000	58728	17,40	
TF25 Ni1000 T180 100.06 L1000	58735	18,80	
TF25 Ni1000 T180 150.06 L1000	58742	19,20	

Cable sensors -50..+150 °C – NTC10k			TP3
Item description	Item no.	€	
TF25 NTC10k T150 050.06 L1000	59466	14,20	
TF25 NTC10k T150 100.06 L1000	59473	15,60	
TF25 NTC10k T150 150.06 L1000	59480	15,90	

Cable sensors -50..+150 °C – NTC5k			TP3
Item description	Item no.	€	
TF25 NTC5k T150 050.06 L1000	59404	14,20	
TF25 NTC5k T150 100.06 L1000	59411	15,60	
TF25 NTC5k T150 150.06 L1000	59428	15,90	

Cable sensors -50..+150 °C – NTC1,8k			TP3
Item description	Item no.	€	
TF25 NTC1,8k T150 050.06 L1000	259484	14,20	
TF25 NTC1,8k T150 100.06 L1000	282611	15,60	
TF25 NTC1,8k T150 150.06 L1000	388252	15,90	

Cable sensors -50..+150 °C – KTY81-110			TP3
Item description	Item no.	€	
TF25 KTY81-110 T150 050.06 L1000	68031	12,10	
TF25 KTY81-110 T150 100.06 L1000	68048	13,60	
TF25 KTY81-110 T150 150.06 L1000	68055	13,90	

Cable sensors -50..+150 °C – KTY81-122			TP3
Item description	Item no.	€	
TF25 KTY81-122 T150 050.06 L1000	68154	12,10	
TF25 KTY81-122 T150 100.06 L1000	68161	13,60	
TF25 KTY81-122 T150 150.06 L1000	68178	13,90	

Options		€
Item description		€
3-wire connection -50..+180 °C (3-wire)		1,75
4-wire connection -50..+180 °C (4-wire)		3,20
Add per meter of connection cable 2-wire -50..+180 °C		1,60
Add per meter of connection cable 3-wire -50..+180 °C		2,10
Add per meter of connection cable 4-wire -50..+180 °C		2,60
Protection class IP67		2,00
Tension spring (tensp)		1,30
Connection box with 2 cable entries (connbox)		13,80
Add to price of NTC10k for sensor NTC10k Carel		0,00

Cable sensors -50..+180 °C – Ni1000TK5000			TP3
Item description	Item no.	€	
TF25 Ni1000TK5000 T180 050.06 L1000	58964	20,90	
TF25 Ni1000TK5000 T180 100.06 L1000	58971	22,30	
TF25 Ni1000TK5000 T180 150.06 L1000	58988	22,70	

Cable sensors -50..+150 °C – NTC10k Precon			TP3
Item description	Item no.	€	
TF25 NTC10k Precon T150 050.06 L1000	59718	14,20	
TF25 NTC10k Precon T150 100.06 L1000	59725	15,60	
TF25 NTC10k Precon T150 150.06 L1000	59732	15,90	

Cable sensors -50..+150 °C – NTC20k			TP3
Item description	Item no.	€	
TF25 NTC20k T150 050.06 L1000	59527	14,20	
TF25 NTC20k T150 100.06 L1000	59534	15,60	
TF25 NTC20k T150 150.06 L1000	59541	15,90	

Cable sensors -50..+125 °C – LM235Z			TP3
Item description	Item no.	€	
TF25 LM235Z T125 050.06 L1000	143042	15,90	
TF25 LM235Z T125 100.06 L1000	141024	17,40	
TF25 LM235Z T125 150.06 L1000	387521	17,70	

Cable sensors -50..+150 °C – KTY81-121			TP3
Item description	Item no.	€	
TF25 KTY81-121 T150 050.06 L1000	68093	12,10	
TF25 KTY81-121 T150 100.06 L1000	68109	13,60	
TF25 KTY81-121 T150 150.06 L1000	68116	13,90	

Cable sensors -50..+150 °C – KTY81-210			TP3
Item description	Item no.	€	
TF25 KTY81-210 T150 050.06 L1000	68215	12,10	
TF25 KTY81-210 T150 100.06 L1000	68222	13,60	
TF25 KTY81-210 T150 150.06 L1000	68239	13,90	

Item description: product | sensor | temperature | pocket (length.Ø) | cable length (L)

## TF25

Cable sensors -80..+250 °C – PT100			TP3
Item description	Item no.	€	
TF25 PT100 T250 050.06 L1000	167406	19,10	
TF25 PT100 T250 100.06 L1000	209731	20,20	
TF25 PT100 T250 150.06 L1000	205658	20,50	

Cable sensors -80..+250 °C – PT100 1/3 DIN			TP3
Item description	Item no.	€	
TF25 PT100 1/3 DIN T250 050.06 L1000	195478	22,80	
TF25 PT100 1/3 DIN T250 100.06 L1000	345835	23,90	
TF25 PT100 1/3 DIN T250 150.06 L1000	388276	24,30	

Cable sensors -80..+250 °C – PT1000			TP3
Item description	Item no.	€	
TF25 PT1000 T250 050.06 L1000	168717	21,30	
TF25 PT1000 T250 100.06 L1000	209724	22,40	
TF25 PT1000 T250 150.06 L1000	388283	22,70	

Cable sensors -80..+250 °C – PT1000 1/3 DIN			TP3
Item description	Item no.	€	
TF25 PT1000 1/3 DIN T250 050.06 L1000	356749	24,30	
TF25 PT1000 1/3 DIN T250 100.06 L1000	356756	25,40	
TF25 PT1000 1/3 DIN T250 150.06 L1000	388290	25,70	

Cable sensors -80..+250 °C – Ni1000			TP3
Item description	Item no.	€	
TF25 Ni1000 T250 050.06 L1000	151863	21,00	
TF25 Ni1000 T250 100.06 L1000	182430	22,10	
TF25 Ni1000 T250 150.06 L1000	388306	22,40	

Cable sensors -80..+250 °C – Ni1000TK5000			TP3
Item description	Item no.	€	
TF25 Ni1000TK5000 T250 050.06 L1000	150781	24,90	
TF25 Ni1000TK5000 T250 100.06 L1000	157018	25,60	
TF25 Ni1000TK5000 T250 150.06 L1000	388313	25,90	

Options	
Item description	€
Add per meter of connection cable 2-wire -80..+250 °C	2,65
Protection class IP67	2,00
Tension spring (tensp)	1,30
Connection box with 2 cable entries (connbox)	13,80

Cable sensors -50..+400 °C – PT100/PT1000			TP3
Item description	Item no.	€	
TF25 PT100 T400 050.06 L2000	166195	33,80	
TF25 PT1000 T400 050.06 L2000	166201	33,80	

Options	
Item description	€
Add per meter of connection cable 2-wire -80..+400 °C	4,75

Order example for different items:

**TF25 | PT100 | T400 | 150.06 | L3000**

- TF25** = product
- PT100** = sensor
- T400** = temperature
- 050.06** = pocket (length.Ø)
- L3000** = cable length (mm)

Item description: product | TRV/TRA/BUS | temperature | pocket (length.Ø) | cable length (L)

## TF25

Cable sensors -50..+180 °C – active TRV 0..10 V			TP2
Item description	Item no.	€	
TF25+ TRV MultiRange T180 050.06 L1000	658959	69,90	
TF25+ TRV MultiRange T180 100.06 L1000	658966	71,30	
TF25+ TRV MultiRange T180 150.06 L1000	658973	71,70	

Cable sensors -50..+180 °C – active TRA 4..20 mA			TP2
Item description	Item no.	€	
TF25+ TRA MultiRange T180 050.06 L1000	658980	69,90	
TF25+ TRA MultiRange T180 100.06 L1000	658997	71,30	
TF25+ TRA MultiRange T180 150.06 L1000	659000	71,70	

Options		€
Item description		
TRA/TRV: LCD with enclosure USE-M		39,70
Protection class IP67 (rolled)		2,00
TRV/TRA: Temperature -80..+260 °C (T260)		10,90
TRV/TRA: Add per meter of connection for measuring range up to 160 °C		1,60
TRV/TRA: Add per meter of connection for measuring range up to 260 °C		2,65
Tension spring (tensp)		1,30



Cable sensors -45..+130 °C – active LON			TP2
Item description	Item no.	€	
TF25 LON T130 050.06,5 L1000	95440	181,00	



Cable sensors -20..+120 °C – active RS485 Modbus				TP2
Item description	USEapp	Item no.	€	
TF25+ RS485 Modbus T120 050.06 L1000	✓	659024	104,00	
TF25+ RS485 Modbus T120 100.06 L1000	✓	668255	105,40	



TF25 LON

## TF25

Accessories				AS1
Item description	Item no.	On stock		€
Mounting base enclosure USE-S pure white	667722	☺		5,50
Mounting base enclosure USE-M pure white	668354	☺		7,85
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	☺		6,30
Mounting flange MF6 (brass)	3407	☺		6,30
KL4VA – Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	☺		12,70
KL6VA – Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	☺		12,70
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	☺		29,00
For cable entries and sealing inserts please refer to chapter "Accessories"				

Accessories – thermowell pockets brass for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock		€
MS-thermowell pocket 50 mm type THMSDS50	50 mm	36 mm	610995	☺		7,85
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	☺		8,95
MS-thermowell pocket 150 mm type THMSDS150	150 mm	136 mm	611015	☺		9,45
MS-thermowell pocket 200 mm type THMSDS200	200 mm	186 mm	611022	☺		9,75
MS-thermowell pocket 250 mm type THMSDS250	250 mm	236 mm	611985	☺		11,30
MS-thermowell pocket 300 mm type THMSDS300	300 mm	286 mm	611039	☺		11,60
MS-thermowell pocket 450 mm type THMSDS450	450 mm	436 mm	611046	☺		11,80

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock		€
VA-thermowell pocket 50 mm type THVADS50	50 mm	36 mm	611152	☺		17,10
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	☺		18,90
VA-thermowell pocket 150 mm type THVADS150	150 mm	136 mm	611824	☺		20,30
VA-thermowell pocket 200 mm type THVADS200	200 mm	186 mm	611848	☺		21,40
VA-thermowell pocket 250 mm type THVADS250	250 mm	236 mm	611862	☺		26,60
VA-thermowell pocket 300 mm type THVADS300	300 mm	286 mm	611879	☺		27,80
VA-thermowell pocket 450 mm type THVADS450	450 mm	436 mm	611893	☺		28,70
VA-thermowell pocket 600 mm type THVADS600	600 mm	586 mm	611923	☺		35,20
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	☺		18,20

# Humidity

Humidity sensor for reliable detection of relative humidity and temperature in residential and commercial buildings, outdoor resp. in gaseous media of heating, ventilation and air conditioning systems.



## Sample applications 265

### Room sensors

FTW04	Surface mount sensor Temp. + rH	266
FTW06	Flush mount sensor Temp. + rH	269
FP/FTP	Room pendulum Temp. + rH	271
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1

2

Abfahrt / Departure

Abfahrt / Departure	Abfahrtsort / Departure	Abfahrtsort / Departure
10:00	Sankt Wendel	1
10:05	Waldbrunn	1
10:10	Waldbrunn	1
10:15	Waldbrunn	1
10:20	Waldbrunn	1
10:25	Waldbrunn	1
10:30	Waldbrunn	1
10:35	Waldbrunn	1
10:40	Waldbrunn	1
10:45	Waldbrunn	1
10:50	Waldbrunn	1
10:55	Waldbrunn	1
11:00	Waldbrunn	1
11:05	Waldbrunn	1
11:10	Waldbrunn	1
11:15	Waldbrunn	1
11:20	Waldbrunn	1
11:25	Waldbrunn	1
11:30	Waldbrunn	1
11:35	Waldbrunn	1
11:40	Waldbrunn	1
11:45	Waldbrunn	1
11:50	Waldbrunn	1
11:55	Waldbrunn	1
12:00	Waldbrunn	1

← 1 - 16 und 10  
i s  
Ausgang Stadtmitte  
H&M City Travel Center

### » BENEFITS

- » Reliable measurement of relative humidity
- » High Accuracy
- » Optional temperature sensor





## ALREADY WET HANDS?

Whether room or duct: Highest precision in relative humidity is of paramount importance. Not only for creating comfortable working conditions, a consistent and accurate monitoring of humidity is necessary. In increasingly insulated buildings, hazardous mold formations get observance to the sustainable protection of humans and the building. In order to act precautionary and to control this risk, humidity sensors are additionally equipped with temperature sensors and designed for communication in BUS systems, for wireless EnOcean communication and for direct hook-up.



FTW04



FTW04 P LCD



## FTW04

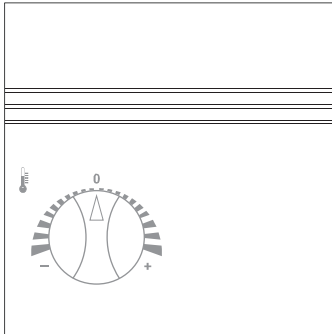
Surface mount room humidity and temperature sensor for room and space monitoring and control applications.

TECHNICAL DATA	
Measuring values	temperature, humidity
Output voltage	VV   VVS: 2x 0..10 V   2x 0..10 V + passive sensor (min. load 10 kΩ)
Output Amp	AA   AAS: 2x 4..20 V   2x 4..20 mA (max. load 500 Ω) + passive sensor
Network technology	BACnet MS/TP KNX (TP) LON FT (free topology) RS485 Modbus digitalSTROM (dS)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) AA   AAS: 15..24 V = (±10%) KNX: supply via BUS dS: 230 V ~ (±10%)
Power consumption	VV   VVS: max. 0,3 W (24 V =)   0,5 VA (24 V ~) AA   AAS: max. 1 W (24 V =) BACnet: typ. 0,4 W (24 V =)   0,6 VA (24 V ~) RS485 Modbus: typ. 0,4 W (24 V =)   0,6 VA (24 V ~) dS: typ. 0,5 VA (230 V ~)
Measuring range temp.	0..+50 °C dS: -20..+60 °C passive: -35..+70 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 °C (typ. at 25 °C) LON: ±0,5 K (typ. at 21 °C) RS485 Modbus: ±1% of measuring range (typ. at 21 °C) dS: ±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C) dS: ±3% between 20..80% rH (typ. at 21 °C)
Inputs	BACnet/RS485 Modbus: 2 digital entries, floating max. wire length 10 m
Display	LCD 29x12 mm, monochrome (optional)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> KNX: KNX terminal block
Ambient condition	-35..+70 °C dS: -20..+70 °C KNX: -20..+60 °C, max. 85% rH short term condensation
Mounting	surface mounted on flush-mounting box (Ø=55 mm)

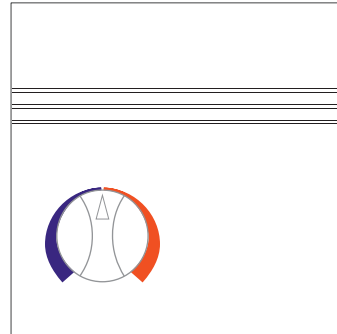
## FTW04

### Standard labelling (only with option potentiometer)

FTW04 P standard labelling



FTW04 P standard labelling colour  
(refer to options)



Item description: product | VV / AA

Room sensor temperature + humidity – active VV 2x 0..10 V   AA 2x 4..20 mA			HU2
Item description	Item no.	On stock	€
FTW04 VV	196352	●	153,80
FTW04 AA	609555	●	153,80

Options	
Item description	€
LCD	39,70
Potentiometer (passive)	22,40
Default labelling P colour red+blue	6,00
Additional passive temperature sensor	14,30

Order example for different items:

**FTW04 | P | VV | PT1000 | LCD**

- FTW04** = product
- P** = potentiometer (10 kOhm)
- VV** = 2x 0..10 V output
- PT1000** = additional passive temperature sensor
- LCD** = display

## FTW04



Room sensor temperature + humidity – active BUS/digitalSTROM				HU1
Item description	Item no.	On stock	€	
FTW04 BACnet	548298		192,70	
FTW04 KNX	585606		231,30	
FTW04 LON	297776		242,70	
FTW04 RS485 Modbus	601153	⊖	192,70	
FTW04 dS	619219		169,00	

Options		€
Item description		
LCD (available for LON and RS485 Modbus)		39,70
Potentiometer (passive; available for LON and RS485 Modbus)		22,40
Default labelling P colour red+blue		6,00

Order example for different items:

### FTW04 | P | LON | LCD | standard labelling colour

- FTW04** = product
- P** = potentiometer (10 kOhm)
- LON** = BUS
- LCD** = display
- Labelling** = standard red-blue

Accessories				AS1
Item description	Item no.	On stock	€	
Rawlplugs and screws (2 pcs. each)	102209	⊖	0,80	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊖	42,00	
Frame for surface mounting WRF04	111584	⊖	12,40	
Ball stroke protection BS150, transparent (for series WRF04)	647007	⊖	22,70	



FTW06  
Gira E2 pure white



FTW06 dS  
Gira E2 pure white



FTW06 LCD dS  
Gira E2 pure white

## FTW06

Room humidity and temperature sensor for room and space monitoring and control applications. compatible with switch frames 55x55 mm.

TECHNICAL DATA	
Measuring values	temperature, humidity
Output voltage	VV   VVS: 2x 0..10 V   2x 0..10 V + passive sensor (min. load 10 kΩ)
Network technology	digitalSTROM (dS)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) dS: 230 V ~ (±10%)
Power consumption	VV   VVS: max. 0,3 W (24 V =)   0,5 VA (24 V ~) dS: typ. 0,5 VA (230 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±1% of measuring range (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
No. of buttons	FTW06 LCD dS: 4
Display	FTW06 LCD dS: 34x21 mm, monochrome
Protection	IP30 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> , pluggable
Mounting	flush mounted in standard EU box (Ø=55 mm)
Notes	please specify frame design when ordering additional passive sensor available (please specify in order) e.g.: PT100, PT1000, NI1000, NI1000TK5000, NTCxx, LM235Z, other sensors on request (not possible for dS types)

## FTW06

Item description: product | VV/dS | switch range | colour

Room sensor temperature + humidity – active VV 2x 0..10 V			HU1
Item description	Item no.	€	
FTW06 VV Gira E2 pure white	459167	208,00	
FTW06 VV Berker S.1 polar white	501798	208,00	
FTW06 VV Busch-Jaeger Balance Si alpine white	615341	208,00	
FTW06 VV Jung A 500 alpine white	630177	208,00	
FTW06 VV Merten M-Smart polar white brilliant	571746	208,00	



Room sensor temperature + humidity – active digitalSTROM			HU1
Item description	Item no.	€	
FTW06 dS Gira E2 pure white	624787	220,00	

Room operating unit temperature + humidity– digitalSTROM			HU1
Item description	Item no.	€	
FTW06 LCD dS Gira E2 pure white	624800	260,00	

Options		€
Item description		
Additional passive temperature sensor		14,30
Switch range Gira Esprit		22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)		35,10
Other switch ranges		12,50

Order example for different items:

**FTW06 | VVS | PT1000 | Gira Esprit**

- FTW06** = product
- VV** = 2x 0..10 V output
- PT1000** = additional passive temperature sensor
- Gira Esprit** = switch range Gira Esprit

Accessories				AS1
Item description	Item no.	On stock	€	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737	☉	42,00	



FP/FTP

## FP/FTP

Room pendulum sensor for sectional measuring of relative humidity (type FP) or humidity and temperature (type FTP) in large and high rooms applications.

TECHNICAL DATA	
Measuring values	V   A: humidity VV   AA: temperature + humidity VS   AS: temperature (passive) + humidity
Output voltage	V: 1x 0..10 V VS: 1x 0..10 V + passive sensor VV: 2x 0..10 V
Output Amp	A: 1x 4..20 mA AA: 2x 4..20 mA AS: 1x 4..20 mA (max. load 500 Ω) + passive sensor
Power supply	15..24 V = (±10%) or 24 V ~ (±10%) A   AA   AS: 15..24 V = (±10%)
Power consumption	max. 0,4 W (24 V =)   0,7 VA (24 V ~)
Measuring range temp.	-20..+80 °C passive: depending on used sensor
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 K (typ. at 21 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Accuracy humidity	±2% between 35..75% rH (typ. at 21 °C)
Protection	IP20 according to EN 60529
Connection electrical	sensor wire PVC, Ø=14 mm, white 1 m (default), 2 m, 4 m, 6 m, for other lengths please request
Pipe	PVC, with stainless steel weight, black, Ø=19 mm length 180 mm
Filter	PVDF
Ambient condition	-20..+70 °C, max. 85% rH non-condensing
Notes	for other sensors please request

Item description: product | output (V/A) | cable length (L)

Room pendulum sensor humidity – active V 0..10 V   A 4..20 mA			HU1
Item description	Item no.		€
FP V L1000	144544		272,60
FP A L1000	173407		272,60

Item description: product | output (VV/AA) | cable length (L)

Room pendulum sensor temperature + humidity – active VV 2x 0..10 V   AA 2x 4..20 mA			HU1
Item description	Item no.		€
FTP VV L1000	152273		347,60
FTP AA L1000	185653		347,60

**FP/FTP**

Item description: product | output (VS) | sensor | cable length (L)

Room pendulum sensor humidity (active) + temperature (passive) – VS 0..10 V + Sensor			HU1
Item description	Item no.	€	
FTP VS PT100 L1000	356480	290,80	
FTP VS PT100 1/3 DIN L1000	356497	294,50	
FTP VS PT1000 L1000	153140	293,00	
FTP VS PT1000 1/3 DIN L1000	281416	296,00	
FTP VS Ni1000 L1000	253109	292,70	
FTP VS Ni1000TK5000 L1000	332200	296,20	
FTP VS NTC10k L1000	356527	289,50	
FTP VS NTC10k Precon L1000	356459	289,50	
FTP VS NTC20k L1000	356534	289,50	
FTP VS NTC1,8k L1000	356503	289,50	
FTP VS LM235Z L1000	204798	291,90	

Item description: product | output (AS) | sensor | cable length (L)

Room pendulum sensor humidity (active) + temperature (passive) – AS 4..20 mA + Sensor			HU1
Item description	Item no.	€	
FTP AS PT100 L1000	356350	290,80	
FTP AS PT100 1/3 DIN L1000	356367	294,50	
FTP AS PT1000 L1000	356374	293,00	
FTP AS PT1000 1/3 DIN L1000	356381	296,00	
FTP AS Ni1000TK5000 L1000	356398	296,20	
FTP AS Ni1000 L1000	297493	292,70	
FTP AS NTC10k L1000	356442	289,50	
FTP AS NTC10k Precon L1000	215466	289,50	
FTP AS NTC20k L1000	356466	289,50	
FTP AS NTC1,8k L1000	356428	289,50	
FTP AS LM235Z L1000	356473	291,90	

Options		€
Item description		
Add per meter of connection cable (FP)	1,00	
Add per meter of connection cable (FTP)	1,20	
Add to price of NTC10k for sensor NTC5k   NTC10k Carel	0,00	
Add to price of PT100 for sensor FeT	19,25	

Order example for different items:

**FTP | AS | NTC1,8k | L2000**

**FTP** = product  
**AS** = 4..20 mA output + sensor  
**NTC1,8k** = sensor  
**L2000** = cable length (mm)

Accessories			AS1
Item description	Item no.	On stock	€
Filter PVDF (spare part)	118583		20,50





FT-RDF18+

## FT-RDF18+

Ceiling sensor for unobtrusive humidity and temperature measurement in the ceiling area of room and office spaces. Designed for control and monitoring applications. Replaces FT-RDF18 with the newly developed enclosure USE-S.

TECHNICAL DATA	
Measuring values	temperature, humidity
Output voltage	VV: 2x 0..10 V, min. load 5 kΩ
Output Amp	AA: 2x 4..20 mA, max. load 500 Ω
Power supply	24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%)
Power consumption	VV: max. 0,45 W (24 V =)   0,8 VA (24 V ~) AA: max. 1 W (24 V =)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 °C (typ. at 25 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-S, PC, pure white with removable cable entry
Protection	IP65 according to EN 60529 sensor head: IP30 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> connection wire sensor head to plug RJ12: PVC 0,15 m connection wire bush RJ12 to enclosure: PVC 3 m
Sensor head	ABS, white, Ø=30 mm
Ambient condition	-35..+70 °C max. 85% rH short term condensation
Delivery contents	incl. mounting base enclosure USE-S pure white

Item description: product | output (VV/AA)

Ceiling sensor temperature + humidity – active VV 2x 0..10 V   AA 2x 4..20 mA			HU1
Item description	Item no.		€
FT-RDF18+ VV	659031		297,10
FT-RDF18+ AA	659055		297,10

Accessories				AS1
Item description	Item no.	On stock		€
Mounting base enclosure USE-S pure white	667722	🌀		5,50

For cable entries and sealing inserts please refer to chapter „Accessories“



FTK+



FTK LON



## FTK+



Duct sensor for measuring humidity and temperature in gaseous media of heating, ventilation and air-conditioning systems. In delivery condition, the sensor is designed for measuring temperature and relative humidity. Alternatively the output can be set to absolute humidity, enthalpy or dew point (depending on the model, changeable via jumper or using Thermokon USEapp). LCD models with RGB background light have a transparent cover. Display configuration and threshold values for color changes can be parameterized via Thermokon USEapp. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature or humidity can be realized. A mounting flange and fixing material are included in delivery. Replaces FTK in the newly developed enclosure USE-M.

TECHNICAL DATA	
Measuring values	temperature, humidity
Output voltage	VV   VVS: 2x 0..10 V   2x 0..10 V + passive sensor (min. load 10 kΩ)
Output Amp	AA   AAS: 2x 4..20 V   2x 4..20 mA (max. load 500 Ω) + passive sensor
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	VV: 24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%) LON: 15..24 V = (±10%) or 24 V ~ (±10%) RS485 Modbus: 24 V = or 24 V ~ (±20%)
Power consumption	VV   VVS: max. 0,4 W (24 V =)   0,8 VA (24 V ~) AA   AAS: max. 1 W (24 V =) LON: max. 0,7 W (24 V =)   1,9 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	adjustable at the transducer -40..+60   0..+50   -20..+80   -15..+35 default setting: -20..+80 °C passive: depending on used sensor
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50   0..80 g/m³ dew point: 0..+50   -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,5 °C (typ. at 25 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Air speed	max. 12 m/s
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-S LCD/RS485 Modbus/relay: enclosure USE-M PC, pure white LCD: cover PC, transparent with removable cable entry LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm

## FTK+

Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup> LON: terminal block, max. 1,5 mm <sup>2</sup>
Pipe	PA6, black, Ø=19,5 mm, length 140   270   400 mm LON: Ø=19 mm, length 130   260   390 mm
Filter	stainless steel wire mesh LON: PVDF
Ambient condition	-20..+70 °C
Delivery contents	incl. mounting flange
Notes	additional passive sensor available (type VVS/AAS)

Item description: product | pipe (length) | output (VV/AA)

Duct humidity sensor temperature + humidity – active 2x 0..10 V			HU2
Item description	Item no.	On stock	€
FTK+ 140 VV incl. MF20	626347	⊕	159,70
FTK+ 270 VV incl. MF20	626354	⊕	166,80
FTK+ 400 VV incl. MF20	626361	⊕	173,90

Duct humidity sensor with display temperature + humidity – active 2x 0..10 V			HU1
Item description	USEapp	Item no.	€
FTK+ 140 LCD VV incl. MF20	✓	663083	199,40
FTK+ 270 LCD VV incl. MF20	✓	663090	206,50
FTK+ 400 LCD VV incl. MF20	✓	663113	213,60

Duct humidity sensor temperature + humidity – active 2x 4..20 mA			HU2
Item description	Item no.	On stock	€
FTK+ 140 AA incl. MF20	626378	⊕	159,70
FTK+ 270 AA incl. MF20	626385	⊕	166,80
FTK+ 400 AA incl. MF20	626392	⊕	173,90

Duct humidity sensor with display temperature + humidity – active 2x 4..20 mA			HU1
Item description	USEapp	Item no.	€
FTK+ 140 LCD AA incl. MF20	✓	663120	208,70
FTK+ 270 LCD AA incl. MF20	✓	663137	206,50
FTK+ 400 LCD AA incl. MF20	✓	663144	213,60

Duct humidity sensor temperature + humidity – active 2x 0..10 V + relay			HU1
Item description	USEapp	Item no.	€
FTK+ 140 VV relay incl. MF20	✓	663151	198,70
FTK+ 270 VV relay incl. MF20	✓	663168	205,80
FTK+ 400 VV relay incl. MF20	✓	663175	212,90

## FTK+

Duct humidity sensor with display temperature + humidity – active 2x 0..10 V + relay				HU1
Item description	USEapp	Item no.	€	
FTK+ 140 LCD VV relay incl. MF20	✓	663205	228,70	
FTK+ 270 LCD VV relay incl. MF20	✓	663229	235,80	
FTK+ 400 LCD VV relay incl. MF20	✓	663236	242,90	

Options	
Item description	€
Additional passive temperature sensor	14,30



Duct humidity sensor temperature + humidity – active LON			HU1
Item description	Item no.	€	
FTK 130 LON incl. MF19	120609	248,70	
FTK 260 LON incl. MF19	120296	255,70	
FTK 390 LON incl. MF19	174855	262,80	



Duct humidity sensor temperature + humidity – active RS485 Modbus				HU1
Item description	USEapp	Item no.	€	
FTK+ 140 RS485 Modbus inkl. MF20	✓	659093	198,70	
FTK+ 270 RS485 Modbus inkl. MF20	✓	659109	205,70	
FTK+ 400 RS485 Modbus inkl. MF20	✓	659116	212,80	

Duct humidity sensor with display temperature + humidity – active RS485 Modbus				HU1
Item description	USEapp	Item no.	€	
FTK+ 140 LCD RS485 Modbus incl. MF20	✓	663243	247,70	
FTK+ 270 LCD RS485 Modbus incl. MF20	✓	663250	254,70	
FTK+ 400 LCD RS485 Modbus incl. MF20	✓	663267	261,80	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-M pure white	668354	☹	7,85	
Rawplugs and screws (2 pcs. each)	102209	☹	0,80	
Filter stainless steel, wire mesh (spare part)	231169	☹	8,80	
Filter PVDF (spare part)	118583	☹	20,50	
Mounting flange MF19 (for LON)	527705	☹	11,70	
Mounting flange MF20	612562	☹	11,70	
Weather protection for FTK, FTK+, WSA (replacement)	625241	☹	99,00	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	☹	29,00	
For cable entries and sealing inserts please refer to chapter „Accessories“				



WSA



## WSA

Protected humidity and temperature sensor for outside applications. The radiation shield protects the outside sensors from rain and radiated heat. With the curved shape and color of the plates air flow is able to move across the sensors to keep radiated temperatures from rooftops and surrounding surfaces from affecting humidity readings.

TECHNICAL DATA	
Measuring values	temperature, humidity
Output voltage	VV: 2x 0..10 V, min. load 10 kΩ
Output Amp	AA: 2x 4..20 mA, max. load 500 Ω
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%)
Power consumption	VV: max. 0,4 W (24 V =)   0,8 VA (24 V ~) AA: max. 1 W (24 V =) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	-20..+80 °C
Measuring range humidity	0..100% rH non-condensing
Accuracy temperature	±0,5 °C (typ. at 25 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Enclosure	enclosure USE-S RS485 Modbus: enclosure USE-M PC, pure white
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm BUS: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pipe	PA6, black, Ø=19,5 mm
Filter	stainless steel wire mesh
Ambient condition	-20..+70 °C max. 85% rH short term condensation
Mounting	mounting at the wall or at a mast

Weather protection outdoor sensor temperature + humidity – active 2x 0..10 V   4..20 mA			HU2
Item description	Item no.		€
WSA VV	626408		258,70
WSA AA	626415		258,70

Weather protection outdoor sensor temperature + humidity – active BUS			HU1
Item description	USEapp	Item no.	€
WSA RS485 Modbus	✓	626439	297,70

Accessories				AS1
Item description	Item no.	On stock		€
Filter stainless steel, wire mesh (spare part)	231169	⊕		8,80
Filter PVDF (spare part)	118583	⊕		20,50
Weather protection for FTK, FTK+, WSA (replacement)	625241	⊕		99,00
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊕		29,00

For cable entries and sealing inserts please refer to chapter „Accessories“



FTA54+



FTA54+ LCD



FTA54 LON  
with rain protection

## FTA54+

Sensor for measuring humidity and temperature in outdoor areas. In delivery condition, the sensor is designed for measuring temperature and relative humidity. Alternatively the output can be set to absolute humidity, enthalpy or dew point (depending on the model, changeable via jumper or using Thermokon USEapp). LCD models with RGB background light have a transparent cover. Display configuration and threshold values for color changes can be parameterized via Thermokon USEapp. With the option board relay two-point controllers or a 2-stage 2-point controller for temperature or humidity can be realized. A mounting base for mounting on a level surface and fixing material are included in delivery. Replaces FTA54 in the newly developed enclosure USE-M.

### TECHNICAL DATA

Measuring values	temperature, humidity
Output voltage	VV   VVS: 2x 0..10 V   2x 0..10 V + passive sensor (min. load 10 kΩ)
Output Amp	AA   AAS: 2x 4..20 V   2x 4..20 mA (max. load 500 Ω) + passive sensor
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) AA   AAS: 15..24 V= (±10%)
Power consumption	VV   VVS: max. 0,3 W (24 V =)   0,5 VA (24 V ~) AA   AAS: max. 40 mA (24 V =) LON: typ. 0,6 W (24 V =)   1,2 VA (24 V ~) RS485 Modbus: typ. 0,7 W (24 V =)   1,8 VA (24 V ~)
Measuring range temp.	adjustable at the transducer -40..+60   0..+50   -20..+80   -15..+35 default setting: -20..+80 °C passive: depending on used sensor
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 kJ/kg absolute humidity: 0..50   0..80 g/m <sup>3</sup> dew point: 0..+50   -20..+80 °C adjustable at the transducer
Accuracy temperature	±0,5 °C (typ. at 25 °C) passive: typ. ±0,3 K (typ. at 21 °C), depending on used sensor
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent with removable cable entry LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm LON: M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pipe	PC, pure white
Filter	stainless steel wire mesh



## FTA54+

Ambient condition	-20..+70 °C
Delivery contents	incl. mounting base enclosure USE-M pure white incl. rain protection PA6, white
Notes	for other sensors please request

Item description: product | VV / AA / BUS

Outdoor humidity sensor (opt. with display) temperature + humidity – active 0..10 V   4..20 mA   relay				HU1
Item description	USEapp	Item no.	On stock	€
FTA54+ VV		659147	☉	195,10
FTA54+ AA		659154	☉	195,10
FTA54+ VV relay	✓	661003		234,10
FTA54+ LCD VV	✓	660983		234,80
FTA54+ LCD AA	✓	660990		234,80
FTA54+ LCD VV relay	✓	661010		264,10

Options	
Item description	€
Additional passive temperature sensor	14,30

Order example for different items:

### FTA54+ | AAS

FTA54+ = product  
AAS = 4..20 mA output + additional passive temperature sensor (e.g. PT1000)



Outdoor humidity sensor (opt. with display) temperature + humidity – active BUS				HU1
Item description	USEapp	Item no.	On stock	€
FTA54 LON		139564		284,10
FTA54+ RS485 Modbus	✓	659178		234,10
FTA54+ LCD RS485 Modbus	✓	661034		283,10

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-M pure white	668354	☉	7,85	
Rawplugs and screws (2 pcs. each)	102209	☉	0,80	
Filter stainless steel, wire mesh (spare part)	231169	☉	8,80	
Rain protection PA6 white, for outdoor humidity sensor	587709	☉	5,80	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	☉	29,00	
For cable entries and sealing inserts please refer to chapter „Accessories“				



FSR01  
standard labelling  
for outside adjustment

## FSR01

FSR humidistats are designed for the on/off control of ventilation and air conditioning, humidification and dehumidification equipment in room applications.

### TECHNICAL DATA

Measuring values	humidity
Medium	air, non-pressurized, non-aggressive
Output switch contact	switching difference 4% rH (at 50% rH) max. 250 V ~
Measuring range humidity	30..100% rH non-condensing
Working range humidity	35..95% rH
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Air speed	max. 15 m/s
Sensor	Polyga® measuring element, water resistant, washable
Enclosure	ASA, pure white
Protection	IP20 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+60 °C
Notes	possible with outside or threshold adjustment

Room hygrostat			HU1
Item description	Item no.	On stock	€
FSR01	427623	●	80,00
FSR01 inside adjustment	450607		80,00

Accessories			AS1
Item description	Item no.	On stock	€
Rawlplugs and screws (2 pcs. each)	102209	●	0,80
Frame for surface mounting WRF04	111584	●	12,40





FSK01

## FSK01

Hygrostat (ON-OFF controller) to control the relative air humidity. It is designed for applications, where air humidity has to be controlled or monitored as ventilation and air conditioning, humidification and dehumidification equipment, in offices and computer rooms, foodstuffs and luxury foods, cooling rooms for fruit and vegetables, greenhouses for gardening use, textile industry, paper and printing industry, film industry, hospitals and similar applications.

TECHNICAL DATA	
Measuring values	humidity
Medium	air, non-pressurized, non-aggressive
Output switch contact	switching difference 4% rH (at 50% rH) max. 250 V ~
Measuring range humidity	30..100% rH non-condensing
Working range humidity	35..95% rH
Accuracy humidity	±3% between 20..80% rH (typ. at 21 °C)
Air speed	max. 8 m/s with sensor protection max. 15 m/s
Sensor	Polyga® measuring element, water resistant, washable
Enclosure	ABS, pure white, light grey
Protection	IP54 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pipe	stainless steel, Ø=16 mm, length 220 mm
Filter	PTFE
Ambient condition	-20..+60 °C
Notes	possible with outside or threshold adjustment

Duct hygrostat			HU1
Item description	Item no.	On stock	€
FSK01	427593	⊕	220,00

Accessories			AS1
Item description	Item no.	On stock	€
PTFE filter	429054	⊕	41,70
Mounting flange MF19 (for LON)	527705	⊕	11,70
Sensor protection (wire mesh) for fan speeds 8..15 m/s	429047	⊕	22,50
Wall mounting for duct hygrostat	429030	⊕	38,00



WK01+ 24 V



WK01+ ext. 230 V



WK01 UP

## WK01+

Condensation sensor with LED signal designed to provide a switched output signal to prevent condensation on chilled surfaces such as chilled beams. With signaling LED and relay contact for control and monitoring applications or for series connection with the cooling valve in order to interrupt the cooling water flow directly at the beginning of condensation. Type ext. has a 2 m remote sensor. Replaces WK01 in the newly developed enclosure USE-S/USE-M.

### TECHNICAL DATA

Measuring values	humidity
Output switch contact	changeover contact 24 V: max. 24 V / 1,0 A (resistive, floating) 230 V: max. 230 V ~ / 0,5 A (resistive, non-floating)
Power supply	24 V: 24 V = or 24 V ~ (±20%) 230 V: 230 V ~ (±10%)
Power consumption	24 V: typ. 0,8 W (24 V =)   1,6 VA (24 V ~) 230 V: typ. 3,5 VA
Display	LED green – power supply OK LED red – condensation
Enclosure	enclosure USE-M, PC, pure white cover, transparent WK01+ 24 V: enclosure USE-S, PC, pure white with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C max. 85% rH short term condensation
Delivery contents	1x syringe with terminal contact fluid
Notes	WK01 UP: type flush mounting Berker K1 polar white brilliant, other switch programmes on request WK01 ext.: with external sensor (PVC, diameter 0,25 mm <sup>2</sup> , L=2 m)

## WK01+

Item description: product | volt

Condensation sensor – 24 V			HU2
Item description	Item no.	On stock	€
WK01+ 24 V	659215	⊕	94,30
WK01+ ext. 24 V L2000	659222	⊕	108,80

Condensation sensor – 230 V			HU2
Item description	Item no.		€
WK01+ 230 V	659239		130,40
WK01+ ext. 230 V L2000	659246		150,00

Item description: product | switch range | colour | volt

Condensation sensor flush mount – 24 V			HU2
Item description	Item no.		€
WK01 UP L2500 Berker K1 polar white brilliant 24 V	446624		133,70



LS02

## LS02

Water leak detection sensor with LED signal and relay output. Designed for alarm, control and monitoring applications.

TECHNICAL DATA	
Measuring values	humidity
Output switch contact	changeover contact 24 V: max. 24 V / 1,0 A (resistive) floating
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	typ. 0,6 W (24 V =)   1,5 VA (24 V ~)
Sensor	4 detector electrodes stainless steel V2A
Display	LED green – power supply OK LED red – alarm
Enclosure	PA6, pure white cover PC, transparent with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+60 °C
Mounting	adjustment in height is possible using adjustable contacts

Water leak detection sensor				HU2
Item description	Item no.	On stock	€	
LS02	427807	⊕	87,90	

# Pressure & Velocity

Pressure and air flow sensors for cooling and air conditioning must resist extreme conditions. Therefore our products are customized to withstand even the harshest environments.



## Sample applications 287

### Gases

DPA+	Differential pressure transducer / Volume flow transducer	288
PS	Differential pressure switch	292
AVT	Air velocity and temp. transducer	293

### Manometer

MM	Differential pressure manometer	294
MM PS	Diff. pressure manometer/switch	295
DPG	Differential pressure manometer	296
DPG PS	Diff. pressure manometer/switch	297

### Fluids

DLF	Pressure transmitter	298
DPL	Differential pressure transmitter	300



## » BENEFITS

- » Reliable detection of pressure, differential pressure & velocity
- » High protection
- » Highest accuracies for a precise monitoring
- » Selectable measuring ranges for flexibility



1

**DPA+**

Differential pressure and volume flow transducer with 8 selectable measuring ranges



2

**DLF**

Pressure transducer for detecting pressure in liquid media



3

**DPL**

Differential pressure transducer for detecting differential pressure in liquid media



4

**PS**

Adjustable differential pressure switch for detecting differential air pressure



5

**DPG**

Differential pressure manometer for monitoring differential pressure

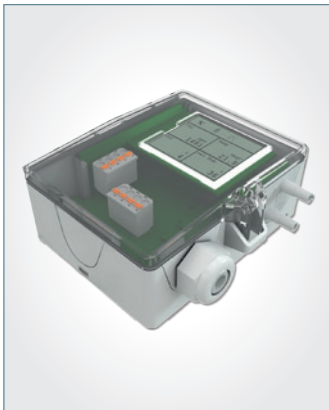


## THE CORRECT PRESSURE

Our customized pressure and flow rate sensors are used for monitoring of pressure, differential pressure, flow rate of liquids and non-flammable gases in air filters, industrial air cooling cycles and ventilation ducts.



DPA+



DPA+ LCD



DPA+

with additional cable entry  
(refer to mounting accessories USE)

## DPA+

Differential pressure and volume flow transducer for monitoring differential pressure and volume flow of air and other non-flammable and non-aggressive gases. Three types with eight different measuring ranges are available for different applications. In addition to differential pressure all variants provide the calculated volume flow as second analog output signal. LCD models with RGB background light have a transparent cover. Display configuration, values for flow calculation (default 1.00) and threshold values for color changes can be parameterized via Thermokon USEapp. For a more precise measurement and for a better long-term stability we recommend the option „AZ“ (automatic zero-point calibration). With the option board relay two-point controllers or a 2-stage 2-point controller for differential pressure or volume flow can be realized. The mounting base (included in delivery) allows mounting on a level surface or mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715. Replaces DPA in the newly developed enclosure USE-L.

### TECHNICAL DATA

Measuring values	differential pressure, volume flow
Medium	air or other non-flammable/non-aggressive gases
Output voltage	0..10 V
Output Amp	4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) TRA: 15..24 V = (±10%)
Power consumption	typ. 1,1 W (24 V =)   1,7 VA (24 V ~) A: max. 20 mA (24 V =) RS485 Modbus: typ. 1,4 W (24 V =)   2 VA (24 V ~)
Measuring range pressure	type 250: 0..+25   0..+50   0..+100   0..+250   -25..+25   -50..+50   -100..+100   -150..+150 Pa  type 2500: -100..+100   0..+100   0..+250   0..+500   0..+1000   0..+1500   0..+2000   0..+2500 Pa  type 7000: 0..+1000   0..+1500   0..+2000   0..+2500   0..+3000   0..+4000   0..+5000   0..+7000 Pa  Volume flow: 0..100   500   1.000   5.000   10.000   50.000   100.000   200.000 m³/h  selectable at the device for other ranges please request
Accuracy pressure	type 250: ±1 Pa at range <250 Pa type 2500: ±5 Pa at range <500 Pa, ±10 Pa at range >500 Pa type 7000: ±10 Pa at range <2000 Pa, ±25 Pa at range >2000 Pa deviation from calibration reference device (calibrator)
Max. working overpressure	400 kPa
Calibration	Automatic zero point calibration (optional)
Sensor	piezo measuring element
Display	LCD 37,5x31,6 mm, (optional) measured values: Pa, inchWC, mmWC, kPa, mbar, psi (configurable) RS485 Modbus measured values: Pa, kPa, mbar,





	mmWC, inchWC, psi, m <sup>3</sup> /h, m <sup>3</sup> /s, cfm, l/s, scfh, f/min (configurable)
Enclosure	enclosure USE-L, PC, pure white with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm seal insert for double cable entry for wire max Ø=6 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Connection mechanical	pressure connection male Ø=5,0 mm / Ø=6,3 mm connection tube: PVC, soft
Ambient condition	-10..+50 °C, max. 85% rH short term condensation
Mounting	screw mounted onto flat surface prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Delivery contents	2 mounting screws, 2 plastic duct flanges, 2 m PVC connection tube incl. mounting base enclosure USE-L pure white

Item description: product | VV | AZ (automatic zero-point calibration) | MultiRange

Differential pressure and volume flow transducer – 2x 0..10 V				PR2
Item description	USEapp	Item no.	On stock	€
DPA250+ VV MultiRange		659321	⊕	128,50
DPA2500+ VV MultiRange		659369	⊕	128,50
DPA7000+ VV MultiRange		659376	⊕	128,50
DPA2500+ VV AZ MultiRange		675970	⊕	182,50
DPA7000+ VV AZ MultiRange		675994	⊕	182,50

Item description: product | LCD | VV | AZ (automatic zero-point calibration) | MultiRange

Differential pressure and volume flow transducer with display – 2x 0..10 V					PR1
Item description	USEapp	Item no.	On stock	€	
DPA250+ LCD VV MultiRange	✓	659383	⊕	171,20	
DPA2500+ LCD VV MultiRange	✓	659390	⊕	171,20	
DPA7000+ LCD VV MultiRange	✓	659406	⊕	171,20	
DPA2500+ LCD VV AZ MultiRange	✓	676007	⊕	225,20	
DPA7000+ LCD VV AZ MultiRange	✓	676021	⊕	225,20	

Item description: product | AA | MultiRange

Differential pressure and volume flow transducer – 2x 4..20 mA					PR2
Item description	USEapp	Item no.	On stock	€	
DPA250+ AA MultiRange	✓	666978	⊕	128,50	
DPA2500+ AA MultiRange	✓	666985	⊕	128,50	
DPA7000+ AA MultiRange	✓	666992	⊕	128,50	

Item description: product | LCD | AA | MultiRange

Differential pressure and volume flow transducer with display – 2x 4..20 mA					PR1
Item description	USEapp	Item no.	On stock	€	
DPA250+ LCD AA MultiRange	✓	667104	⊕	171,20	
DPA2500+ LCD AA MultiRange	✓	667111	⊕	171,20	
DPA7000+ LCD AA MultiRange	✓	667128	⊕	171,20	

**DPA+**

Item description: product | MultiRange | relay

Differential pressure and volume flow transducer – 2x 0..10 V + relay				PR1
Item description	USEapp	Item no.		€
DPA250+ VV MultiRange relay	✓	663687		167,50
DPA2500+ VV MultiRange relay	✓	663694		167,50
DPA7000+ VV MultiRange relay	✓	663700		167,50

Item description: product | LCD | MultiRange | relay

Differential pressure and volume flow transducer with display – 2x 0..10 V + relay				PR1
Item description	USEapp	Item no.		€
DPA250+ LCD VV MultiRange relay	✓	663724		197,50
DPA2500+ LCD VV MultiRange relay	✓	663748		197,50
DPA7000+ LCD VV MultiRange relay	✓	663755		197,50

Options	
Item description	€
Automatic zero-point calibration (AZ)	54,00

Order example for different items:

**DPA2500+ | LCD | VV | MultiRange | relay | AZ**

- DPA2500+** = product
- LCD** = display
- VV** = 2x 0..10 V
- MultiRange** = different measuring ranges adjustable
- AZ** = automatic zero point calibration

Item description: product | BUS | AZ (automatic zero-point calibration) | MultiRange

## DPA+



Differential pressure and volume flow transducer – RS485 Modbus				PR1
Item description	USEapp	Item no.	€	
DPA250+ RS485 Modbus MultiRange	✓	659413	132,70	
DPA2500+ RS485 Modbus MultiRange	✓	659420	132,70	
DPA7000+ RS485 Modbus MultiRange	✓	659437	132,70	
DPA2500+ RS485 Modbus AZ MultiRange	✓	676083	186,70	
DPA7000+ RS485 Modbus AZ MultiRange	✓	676090	186,70	

Item description: product | LCD | BUS | AZ (automatic zero-point calibration) | MultiRange



Differential pressure and volume flow transducer with display – RS485 Modbus				PR1
Item description	USEapp	Item no.	€	
DPA250+ LCD RS485 Modbus MultiRange	✓	659444	173,80	
DPA2500+ LCD RS485 Modbus MultiRange	✓	659451	173,80	
DPA7000+ LCD RS485 Modbus MultiRange	✓	659468	173,80	
DPA2500+ LCD RS485 Modbus AZ MultiRange	✓	676106	227,80	
DPA7000+ LCD RS485 Modbus AZ MultiRange	✓	676113	227,80	

Options	
Item description	€
Automatic zero-point calibration (AZ)	54,00

Order example for different items:

**DPA2500+ | LCD | RS485 Modbus | AZ | MultiRange**

- DPA2500+** = product
- LCD** = display
- RS485 Modbus** = BUS
- AZ** = automatic zero point calibration
- MultiRange** = different measuring ranges adjustable

Accessories					AS1
Item description	Length	Item no.	On stock	€	
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊕	29,90	
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊕	8,00	
Mounting base enclosure USE-L pure white		668361	⊕	11,00	
Metal duct connectors MKS40	40 mm	265138	⊕	4,00	
Metal duct connectors MKS100	100 mm	302531	⊕	4,80	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)		668262	⊕	29,00	
For cable entries and sealing inserts please refer to chapter „Accessories“					



PS

## PS

Adjustable pressure switch PS+ for monitoring differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring of air filters, fans, industrial cooling air cycles, flow in ventilation ducts.

### TECHNICAL DATA

Measuring values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Output switch contact	NO/NC circuit, switching difference 30 Pa PS1500: 80 Pa, PS4500: 180 Pa
Measuring range pressure	PS200: 20..200 Pa PS300: 30..300 Pa PS500: 30..500 Pa PS600: 40..600 Pa PS1500: 100..1500 Pa PS4500: 500..4500 Pa
Accuracy pressure	typ. ±5 Pa, PS1500 typ. ±10 Pa, PS4500 typ. ±50 Pa
Max. working overpressure	50 kPa
Switching values	switching capacity PS200: 0,1 A resistive load PS300   PS500   PS600   PS1500: 3 A resistive load, 2 A inductive load PS4500: 5 A resistive load, 2 A inductive load max. 250 V~ miniature switches: silver contacts, PS200 gold contacts service life: >1.000.000 switching operations
Enclosure	ABS, cover PC, membrane silicone
Protection	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Connection mechanical	pressure connection: ABS, connection tube: PVC, soft
Ambient condition	-20..+60 °C max. 85% rH short term condensation
Delivery contents	2 mounting screws 2 plastic duct flanges 2 m PVC connection tube soft, Ø=4/7 mm

### Differential pressure switch

PR2

Item description	Item no.	On stock	€
PS200	255196	⊕	29,40
PS300	269971	⊕	29,40
PS500	269995	⊕	29,40
PS1500	255202	⊕	29,40
PS4500	273138	⊕	29,40

### Accessories

AS1

Item description	Length	Item no.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊕	29,90
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊕	8,00
Metal duct connectors MKS40	40 mm	265138	⊕	4,00
Metal duct connectors MKS100	100 mm	302531	⊕	4,80
Mounting bracket differential pressure switch 110x80x20 mm		669009	⊕	3,50



AVT

## AVT

Air velocity and temperature transducer is engineered for building automation in the HVAC/R industry. The AVT measures air velocity and temperature, with field selectable range and output options in a single device.

TECHNICAL DATA	
Measuring values	temperature, air velocity
Medium	air or other non-flammable/non-aggressive gases
Output voltage	2x 0..10 V, min. load 1 kΩ
Output Amp	2x 4..20 mA, max. load 400 Ω
Output switch contact	AVT-R LCD: relay with change-over contact (volt free contact), 250 V ~ / 6 A, 30 V = / 6 A
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 2 W AVT-R LCD: max. 2,4 W
Measuring range temp.	0..+50 °C
Measuring range velocity	0..2 m/s, 0..10 m/s, 0..20 m/s selectable at the device
Accuracy temperature	<0,5°C (v> 0,5 m/s) ±0,5 K (typ. at 21 °C)
Accuracy velocity	0..2 m/s: <0,1 m/s + 5% of measuring value 0..10 m/s: <0,5 m/s + 5% of measuring value 0..20 m/s: <1,0 m/s + 5% of measuring value
Sensor	temperature: NTC10k air velocity: PT1000
Display	LCD 3,5", 45,7 x 12,7 mm (optional) for indication of measuring values
Enclosure	ABS cover PC
Protection	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm AVT-R LCD: 2x M16
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Pocket	stainless steel V2A, L=210 mm
Ambient condition	0..+50 °C max. 85% rH short term condensation
Delivery contents	incl. mounting flange
Notes	optional with display „LCD“ optional with relay Adjustable Immersion length: 50..180 mm, using mounting flange adjustable switching threshold and hysteresis

### Air velocity transducer – 0..10 V | 4..20 mA

PR1

Item description	Item no.	On stock	€
AVT	430005	⊕	146,80
AVT LCD	430036	⊕	188,40
AVT-R LCD	430067	⊕	208,10



MM

## MM

Differential pressure inclined tube manometers for monitoring differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring of air filters and fans, monitoring of industrial air cycles and duct airflow.

### TECHNICAL DATA

Measuring values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Working range temp.	-40..+60 °C
Measuring range pressure	MM50: -50..50 Pa MM100: -20..100 Pa MM500: -100..500 Pa MM600: 0..600 Pa
Accuracy pressure	MM50   MM100: 1 Pa MM-100/500   MM200600: 5 Pa/ 25 Pa
Max. working overpressure	200 kPa
Enclosure	ABS, cover PMMA
Protection	IP54 according to EN 60529
Connection mechanical	connection tube: PVC, soft
Delivery contents	2 mounting screws 2 plastic duct flanges 2 m PVC connection tube soft, Ø=4/7 mm 30 ml gauge fluid 2 indication stickers (red/green)

### Differential pressure inclined tube manometer

Item description	Item no.	On stock	PR1 €
MM50	268912	●	45,70
MM100	284516	●	45,70
MM500	384452	●	45,70
MM600	255240	●	45,70



MM PS

## MM PS

Differential pressure inclined tube manometer incl. switching contact for monitoring the differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring of air filters and fans, monitoring of industrial air cycles and duct airflow.

### TECHNICAL DATA

Measuring values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Output switch contact	switching difference 30 Pa
Working range temp.	-20..+60 °C
Measuring range pressure	0..600 Pa
Max. working overpressure	50 kPa
Switching values	max. 3 A resistive load, 2 A inductive load max. 250 V ~ miniature switches with silver contacts range: 40..600 Pa service life: >1.000.000 switching operations
Enclosure	ABS, MM: cover PMMA, PS: cover PC membrane silicone
Protection	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Connection mechanical	pressure connection: ABS connection tube: PVC, soft
Ambient condition	-40..+85 °C max. 85% rH short term condensation
Delivery contents	2 mounting screws 2 plastic duct flanges 2 m PVC connection tube soft, Ø=4/7 mm 30 ml gauge fluid 2 indication stickers (red/green)

### Differential pressure inclined tube manometer

PR1

Item description	Item no.	On stock	€
MM600/PS600	255257	⊕	115,10



DPG

## DPG

Differential pressure gauges for monitoring differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring of air filters and fans, monitoring of industrial air cycles and flows in air ducts.

### TECHNICAL DATA

Measuring values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Working range temp.	-5...+60 °C
Measuring range pressure	DPG60: 0..60 Pa DPG100: 0..100 Pa DPG250: 0..250 Pa DPG500: 0..500 Pa DPG1k: 0..1 kPa
Accuracy pressure	DPG60: <±4% of measuring range DPG100: <±3% of measuring range DPG250   DPG500   DPG1k: <±2% of measuring range
Display	display Ø=100 mm
Enclosure	ABS, cover PC
Connection mechanical	connection tube: PVC, soft
Ambient condition	-40...+85 °C max. 85% rH short term condensation
Delivery contents	2 mounting screws 2 plastic duct flanges 2 m PVC connection tube 2 m PVC connection tube soft, Ø=4/7 mm
Notes	please contact us for other ranges.

### Differential pressure gauges

PR1

Item description	Item no.	On stock	€
DPG60	384438		128,10
DPG100	384445		128,10
DPG250	255264	⊕	118,00
DPG500	255271	⊕	118,00
DPG1k	285025	⊕	118,00

### Accessories

AS1

Item description	Length	Item no.	On stock	€
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊕	29,90
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊕	8,00
Metal duct connectors MKS40	40 mm	265138	⊕	4,00
Metal duct connectors MKS100	100 mm	302531	⊕	4,80





DPG PS

## DPG PS

Differential pressure gauges for monitoring differential pressure of air and other non-flammable and non-aggressive gases. Possible applications: Monitoring of air filters and fans, monitoring of industrial air cycles and flows in air ducts.

### TECHNICAL DATA

Measuring values	differential pressure
Medium	air, non-aggressive gases, non-flammable gases
Output switch contact	switching difference PS200: 10 Pa PS600: 30 Pa PS1500: 80 Pa
Working range temp.	-5..+60 °C
Measuring range pressure	DPG200/PS200: 0..200 Pa DPG600/PS600: 0..600 Pa DPG1,5k/PS1500: 0..1500 Pa
Accuracy pressure	±2% of measuring range
Max. working overpressure	50 kPa
Display	display Ø=100 mm
Switching values	PS200: 0,1 A resistive load PS600   PS1500: 3 A resistive load, 2 A inductive load max. 250 V ~ miniature switches: silver contacts, PS200 gold contacts
Enclosure	ABS, cover PC
Protection	IP54 according to EN 60529
Cable entry	M16 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Connection mechanical	pressure connection: ABS connection tube: PVC, soft
Ambient condition	-40..+85 °C max. 85% rH short term condensation
Delivery contents	2 mounting screws 2 plastic duct flanges 2 m PVC connection tube soft, Ø=4/7 mm

### Differential pressure gauges

Item description	Item no.	On stock	PR1
DPG200/PS200	255233		151,00
DPG600/PS600	267205	⊕	151,00
DPG1,5k/PS1500	338066		151,00

### Accessories

Item description	Length	Item no.	On stock	AS1
T-hose connector for pressure hoses Ø=4 mm (10 pcs)		668323	⊕	29,90
Adapter 90° angle for pressure hoses Ø=4 mm		668330	⊕	8,00
Metal duct connectors MKS40	40 mm	265138	⊕	4,00
Metal duct connectors MKS100	100 mm	302531	⊕	4,80



DLF G1/4"

## DLF

Pressure transmitter for detection of static pressure suitable for usage with a large range of liquids and refrigerants. The usage in air and non-aggressive gases is also possible.

### TECHNICAL DATA

Measuring values	pressure
Medium	fluids
Output voltage	0..10 V, min. load 5 k $\Omega$
Output Amp	4..20 mA, max. load 12 V   20 mA
Power supply	V: 15..24 V = ( $\pm$ 10%) or 24 V ~ ( $\pm$ 10%) A: 15..24 V = ( $\pm$ 10%)
Power consumption	V: typ. 0,15 W   0,3 VA A: max. 0,5 W
Working range temp.	-40..+125 °C
Measuring range pressure	depending on device
Accuracy pressure	$\pm$ 0,5% (typ. at +25 °C)
Max. working overpressure	2 nominal pressure
Enclosure	stainless steel V2A P>1 bar: ceramic
Protection	IP65 according to EN 60529
Connection electrical	plug MVS according to DIN EN175301-803
Connection mechanical	G 1/2" G 1/4"
Ambient condition	-40..+105 °C
Notes	please contact us for other ranges.

## DLF

Item description: product | V/A | thread

Pressure transmitter G1/4" – 0..10 V				PR1
Item description	Item no.	On stock		€
DLF-1..0 V G1/4"	665070			105,30
DLF1 V G1/4"	665087	⊕		105,30
DLF1,6 V G1/4"	665094			105,30
DLF2 V G1/4"	665100			105,30
DLF2,5 V G1/4"	665117	⊕		105,30
DLF4 V G1/4"	665124	⊕		105,30
DLF6 V G1/4"	665131	⊕		105,30
DLF10 V G1/4"	665148	⊕		105,30
DLF16 V G1/4"	665155	⊕		105,30
DLF25 V G1/4"	665162	⊕		105,30
DLF40 V G1/4"	665179			105,30
DLF60 V G1/4"	665186			105,30
DLF100 V G1/4"	665193			105,30

Pressure transmitter G1/4" – 4..20 mA				PR1
Item description	Item no.	On stock		€
DLF-1..0 A G1/4"	665209			99,40
DLF1 A G1/4"	665216	⊕		99,40
DLF1,6 A G1/4"	665223			99,40
DLF2 A G1/4"	665230			99,40
DLF2,5 A G1/4"	665247	⊕		99,40
DLF4 A G1/4"	665254	⊕		99,40
DLF6 A G1/4"	665261	⊕		99,40
DLF10 A G1/4"	665278	⊕		99,40
DLF16 A G1/4"	665285	⊕		99,40
DLF25 A G1/4"	665292	⊕		99,40
DLF40 A G1/4"	665308			99,40
DLF60 A G1/4"	665315			99,40
DLF100 A G1/4"	665322			99,40

Accessories				AS1
Item description	Item no.	On stock		€
Connection adapter G 1/4" to G 1/2"	277068	⊕		8,90
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊕		12,50



DPL

## DPL

Differential pressure transducer for liquids and refrigerants in HVAC applications.

TECHNICAL DATA	
Measuring values	differential pressure
Medium	fluids
Output voltage	0..10 V, min. load 2 k $\Omega$
Output Amp	4..20 mA, max. load 2 $\Omega$   24 V =
Power supply	V: 15..24 V = ( $\pm$ 10%) or 24 V ~ ( $\pm$ 10%) A: 15..24 V = ( $\pm$ 10%)
Power consumption	V: typ. 0,37 W (24 V =)   0,9 VA (24 V ~) A: max. 0,5 W
Working range temp.	-10..+80 °C
Measuring range pressure	DPL1: 0..+1 bar DPL2,5: 0..+2,5 bar DPL4: 0..+4 bar DPL6: 0..+6 bar
Accuracy pressure	< $\pm$ 1% of measuring range (typ. at -5..+75 °C)
Enclosure	stainless steel V2A cover: aluminium pressure die casting
Protection	IP65 according to EN 60529
Connection electrical	angle plug according to DIN 43650
Connection mechanical	G 1/4"
Ambient condition	-10..+50 °C
Notes	please contact us for other ranges.

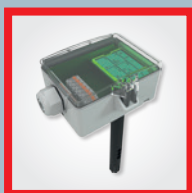
Differential pressure transmitter – 0..10 V				PR1
Item description	Item no.	On stock		€
DPL1 V	346580	⊕		306,00
DPL2,5 V	346665	⊕		306,00
DPL4 V	346672	⊕		306,00
DPL6 V	346689	⊕		306,00

Differential pressure transmitter – 4..20 mA				PR1
Item description	Item no.	On stock		€
DPL1 A	346597	⊕		306,00
DPL2,5 A	346696	⊕		306,00
DPL4 A	346702	⊕		306,00
DPL6 A	346719	⊕		306,00

Accessories				AS1
Item description	Item no.	On stock		€
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊕		12,50
Mounting bracket differential pressure transmitter 40x40x60 mm	663892	⊕		8,90
Screw connection set $\varnothing$ =6 mm stainless steel (2 pcs.)	373388	⊕		56,50
Screw connection set $\varnothing$ =6 mm brass (2 pcs.)	373401	⊕		13,30
Screw connection set $\varnothing$ =8 mm stainless steel (2 pcs.)	373395	⊕		64,90
Screw connection set $\varnothing$ =8 mm brass (2 pcs.)	373418	⊕		13,40

# Air Quality

Mixed gas and CO2 sensors provide for an individual and demand-controlled fresh air supply. In modern buildings the use of these sensors is essential in order to increase energy savings and care for highest comfort levels in living and working spaces.



## Sample applications 303

### Room sensors

WRF04 CO2	Room air quality sensor CO2	304
LC-WRF04 CO2	Room air quality sensor CO2	308
WRF06 CO2	Flush mount air quality sensor CO2	309
LW04	Room air quality sensor VOC	311

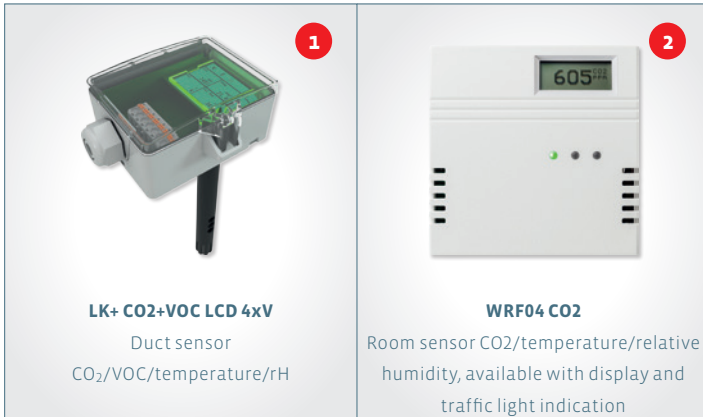
### Duct sensors

LK+ CO2+VOC	Duct air quality sensor CO2 (BUS)	312
LK+ CO2	Duct air quality sensor CO2/VOC	316
LK+ CO2 100	Duct air quality sensor CO2	320
LK+ VOC	Duct air quality sensor VOC	322



## » BENEFITS

- » Reliable detection of CO<sub>2</sub> and mixed gases (VOC)
- » Physical and emotional well-being through demand-controlled fresh air supply
- » Automatic self-calibration for CO<sub>2</sub> using intelligent "Dual Channel" technology
- » Optional temperature and humidity integrated



**LK+ CO<sub>2</sub>+VOC LCD 4xV**

Duct sensor  
CO<sub>2</sub>/VOC/temperature/rH

**WRF04 CO<sub>2</sub>**

Room sensor CO<sub>2</sub>/temperature/relative  
humidity, available with display and  
traffic light indication



>> ALL CO<sub>2</sub> SENSORS WITH AUTOMATIC SELF CALIBRATION

## IDEAL ENVIRONMENTAL CONDITIONS

Our CO<sub>2</sub> and mixed gas sensors reliably detect the indoor air quality in ventilation ducts and control the external air supply. These intelligent air quality sensors create optimal environmental conditions - even in hospitals.



WRF04 CO2 LCD TLF



WRF04 CO2 TLF / WRF04 CO2 LCD



## WRF04 CO2

Surface mounted sensor for detection of CO<sub>2</sub>, temperature and optional relative humidity in room and office spaces. For direct connection to a DDC or a monitoring system, using 0..10 V outputs. Also available with traffic light LED and LCD.

### TECHNICAL DATA

Measuring values	temperature, humidity, CO <sub>2</sub>
Output voltage	VV: 2x 0..10 V 3xV: 3x 0..10 V max. load 10 kΩ
Output switch contact	relay with change-over contact (volt free contact, optional) adjustable CO <sub>2</sub> threshold value (valid with version active VV   3xV)
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 3 W (24 V =)   6 VA (24 V ~)
Measuring range temp.	0..+50 °C
Measuring range humidity	0..100% rH non-condensing
Measuring range CO <sub>2</sub>	0..2000 ppm
Accuracy temperature	±1% of measuring range (typ. at 21 °C)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO <sub>2</sub>	±75 ppm, >750 ppm: ±10% (typ. at 21 °C)
Calibration	self-calibration, Dual Channel
Sensor	CO <sub>2</sub> : NDIR (non-dispersive, infrared)
Display	LCD 29x12 mm, monochrome (optional, not with BACnet) 3 LEDs indicating air quality (traffic light function 'TLF')
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Mounting	to be mounted flat onto the surface using adhesive foil or screws
Notes	optional with display "LCD" optional with relay (floating, max. 24 V / 2 A (ohmic)) optional with traffic light function "TLF"



## WRF04 CO2

Item description: product | VV | LCD | TLF (traffic light function)

Room sensor temperature + CO2 – active VV 0..10 V				AQ1
Item description	Item no.	On stock		€
WRF04 CO2 VV	423717	⊕		244,70
WRF04 CO2 VV LCD	423731			273,50
WRF04 CO2 VV TLF	423724			251,90
WRF04 CO2 VV LCD TLF	439114			280,70

Item description: product | BUS | LCD | TLF (traffic light function)



Room sensor temperature + CO2 – active BACnet MS/TP				AQ1
Item description	Item no.			€
WRF04 CO2 BACnet MS/TP	548274			266,30
WRF04 CO2 BACnet MS/TP TLF	548847			273,50



Room sensor temperature + CO2 – active LON				AQ1
Item description	Item no.			€
WRF04 CO2 LON	470544			279,70
WRF04 CO2 LON LCD	470575			308,50
WRF04 CO2 LON TLF	470551			286,90
WRF04 CO2 LON LCD TLF	630337			315,70



Room sensor temperature + CO2 – active RS485 Modbus				AQ1
Item description	Item no.			€
WRF04 CO2 RS485 Modbus	470629			266,30
WRF04 CO2 RS485 Modbus LCD	470643			295,10
WRF04 CO2 RS485 Modbus TLF	470636			273,50
WRF04 CO2 RS485 Modbus LCD TLF	630344			302,30

### Options

Item description	€
Potential free relay output with adjustable CO2 threshold value (only with analogue output; relay 2 A / 24 V ~ or 24 V =)	19,80


Order example for different items:

**WRF04 CO2 | VV | LCD | TLF | relay**

**WRF04 CO2** = product  
**VV** = 2x 0..10 V output  
**LCD** = display  
**TLF** = traffic light function  
**relay** = potential free relay output (NO)

## WRF04 CO2

Item description: product | humidity (rH) | 3xV | LCD | TLF (traffic light function)

Room sensor temperature + humidity + CO2 – active 3xV 0..10 V				AQ1
Item description	Item no.	On stock		€
WRF04 CO2 rH 3xV	423748			296,10
WRF04 CO2 rH 3xV LCD	423762			324,90
WRF04 CO2 rH 3xV TLF	423755			303,30
WRF04 CO2 rH 3xV LCD TLF	447164			332,10

Item description: product | humidity (rH) | BUS | LCD | TLF (traffic light function)



Room sensor temperature + humidity + CO2 – active 3xV BACnet MS/TP				AQ1
Item description	Item no.			€
WRF04 CO2 rH BACnet MS/TP	548854			317,70
WRF04 CO2 rH BACnet MS/TP TLF	597012			324,90



Room sensor temperature + humidity + CO2 – active LON				AQ1
Item description	Item no.			€
WRF04 CO2 rH LON	470582			331,10
WRF04 CO2 rH LON LCD	470612			359,90
WRF04 CO2 rH LON TLF	470599			338,30
WRF04 CO2 rH LON LCD TLF	630368			367,10



Room sensor temperature + humidity + CO2 – active RS485 Modbus				AQ1
Item description	Item no.			€
WRF04 CO2 rH RS485 Modbus	470650			317,70
WRF04 CO2 rH RS485 Modbus LCD	470674			346,50
WRF04 CO2 rH RS485 Modbus TLF	470667			324,90
WRF04 CO2 rH RS485 Modbus LCD TLF	630351			353,70

## WRF04 CO2

## Options

Item description	€
Potential free relay output with adjustable CO2 threshold value (only with analogue output; relay 2 A / 24 V ~ or 24 V =)	19,80

Order example for different items:

<b>WRF04 CO2</b>   rH   3xV   LCD   TLF   relay	<b>WRF04 CO2</b>	= product
	<b>rH</b>	= humidity
	<b>3xV</b>	= 3x 0..10 V output
	<b>LCD</b>	= display
	<b>TLF</b>	= traffic light function
	<b>relay</b>	= potential free relay output (NO)

## Accessories

Item description	Item no.	On stock	AS1 €
Rawplugs and screws (2 pcs. each)	102209	☺	0,80
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	☺	42,00
Frame for surface mounting WRF04	111584	☺	12,40
Ball stroke protection BS150, transparent (for series WRF04)	647007	☺	22,70



LC-WRF04 CO2

## LC-WRF04 CO2

Surface mounted sensor for detection of CO2 in room and office spaces. Also possible with operating elements. For direct connection to a DDC or a monitoring system, using 0..10 V output.

TECHNICAL DATA	
Measuring values	V: CO2
Output voltage	V: 1x 0..10 V, max. load 10 kΩ
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 3 W (24 V =)   6 VA (24 V ~)
Measuring range CO2	0..2000 ppm
Accuracy CO2	±75 ppm, >750 ppm: ±10% (typ. at 21 °C)
Calibration	self-calibration, Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Enclosure	PC, pure white
Protection	IP20 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Notes	for devices with temperature sensor, humidity sensor, display and traffic light function please refer to product WRF04 CO2

Room sensor CO2 – active 0..10 V				AQ2
Item description	Item no.	On stock		€
LC-WRF04 CO2	547994	⊕		189,70
LC-WRF04 CO2 with operating unit (potentiometer/switch + LED) on request				

Accessories				AS1
Item description	Item no.	On stock		€
Raw plugs and screws (2 pcs. each)	102209	⊕		0,80
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊕		42,00
Frame for surface mounting WRF04	111584	⊕		12,40
Ball stroke protection BS150, transparent (for series WRF04)	647007	⊕		22,70



## WRF06 CO2

Flush mounting sensor for detection of CO<sub>2</sub>, temperature (optional) and relative humidity (optional) in room and office spaces. Fits into switch frames 55x55 mm. For direct connection to a DDC or a monitoring system, using 0..10 V outputs. Also available with traffic light LED.



WRF06 CO2 3xV,  
Gira E2 pure white



WRF06 CO2 3xV TLF,  
Gira E2 pure white

### TECHNICAL DATA

Measuring values	V: CO <sub>2</sub> VV: CO <sub>2</sub> + temperature 3xV: CO <sub>2</sub> + temperature + humidity
Output voltage	V: 1x 0..10 V VV: 2x 0..10 V 3xV: 3x 0..10 V max. load 10 kΩ
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 1,6 W (24 V =)   3,9 VA (24 V ~)
Measuring range temp.	VV   3xV: 0..+50 °C
Measuring range humidity	3xV: 0..100% rH non-condensing
Measuring range CO <sub>2</sub>	0..2000 ppm
Accuracy temperature	VV   3xV: ±1% of measuring range (typ. at 21 °C)
Accuracy humidity	3xV: ±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO <sub>2</sub>	±50 ppm +2% of measured value (typ. at 25 °C)
Calibration	self-calibration, Dual Channel
Sensor	CO <sub>2</sub> : NDIR (non-dispersive, infrared)
Switch range Berker	S.1, B.3 aluminum, B.7 glass
Switch range Busch-Jaeger	Busch-balance® SI, solo®, future® linear, Busch-axcent®
Switch range Feller	EDIZIOdue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure
Switch range Peha	Aura, Aura glass
Display	3 LEDs indicating air quality (traffic light function 'TLF') (optional)
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+70 °C, max. 85% rH non-condensing
Notes	optional with traffic light function "TLF" please specify frame design when ordering

Item description: product | output (V/VV/3xV) | TLF (traffic light function) | switch range | colour

## WRF06 CO2

Room sensor CO2 – active 0..10 V			AQ1
Item description	Item no.	€	
WRF06 CO2 V Gira E2 pure white	547840	331,10	
WRF06 CO2 V TLF Gira E2 pure white	581585	338,30	

Room sensor temperature + CO2 – active 2x 0..10 V			AQ1
Item description	Item no.	€	
WRF06 CO2 VV Gira E2 pure white	547857	350,60	
WRF06 CO2 VV TLF Gira E2 pure white	581592	357,80	

Room sensor temperature + humidity + CO2 – active 3x 0..10 V			AQ1
Item description	Item no.	€	
WRF06 CO2 3xV Gira E2 pure white	547864	447,20	
WRF06 CO2 3xV TLF Gira E2 pure white	541725	454,40	

Options		€
Item description		
Switch ranges Busch-Jaeger Busch-balance® SI		0,00
Switch ranges Berker S.1   Jung A 500   Merten M-Smart   Gira E3		0,00
Switch range Gira Esprit		22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)		35,10
Other switch ranges		12,50

Order example for different items:

### WRF06 CO2 | 3xV | TLF | Busch-Jaeger Balance SI

**WRF06 CO2** = product  
**3xV** = 3x 0..10 V output  
**TLF** = traffic light function  
**Busch-Jaeger Balance SI** = switch range

Accessories			AS1
Item description	Item no.	On stock	€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~-> 24 V =, 0,5 A)	645737	⊕	42,00



LW04



## LW04



Surface mount sensor for detection of air quality in room and office spaces. The sensor consists of a transmitter with VOC sensor, based on a heated tin oxide semiconductor (VOC = volatile organic compound).

TECHNICAL DATA	
Measuring values	VOC
Output voltage	V: 1x 0..10 V, min. load 10 kΩ
Network technology	LON FT (free topology)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	V: typ. 1,2 W (24 V =)   2,2 VA (24 V ~) LON: typ. 1,5 W (24 V =)   3,5 VA (24 V ~)
Sensor	VOC sensor (heated metal oxide semiconductor)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Item description: product | V / BUS

Room sensor VOC – active V 0..10 V			AQ2
Item description	Item no.	On stock	€
LW04 V	191746	⊕	169,70



Room sensor VOC – active LON			AQ1
Item description	Item no.	On stock	€
LW04 LON	191753	⊕	201,50

Accessories			AS1
Item description	Item no.	On stock	€
Rawplugs and screws (2 pcs. each)	102209	⊕	0,80
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊕	42,00
Frame for surface mounting WRF04	111584	⊕	12,40
Ball stroke protection BS150, transparent (for series WRF04)	647007	⊕	22,70



LK+ CO2+VOC



LK+ CO2+VOC LCD



## LK+ CO2+VOC

Duct air quality sensor for detection of CO<sub>2</sub>, VOC, optional temperature and Humidity. Designed for duct mounted applications with up to 4 0..10 V outputs. Replaces LK-SX CO<sub>2</sub>+VOC in the newly developed enclosure USE-M.

### TECHNICAL DATA

Measuring values	CO <sub>2</sub> , VOC, temperature + humidity (depending on the device) each output can be set to get a variable mix of CO <sub>2</sub> and VOC by configuration
Output voltage	2x/3x/4x 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) VV: 2x 0..10 V or 0..5 V
Output Amp	AA: 2x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A (optional)
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%)
Power consumption	max. 1,5 W (24 V =)   2,9 VA (24 V ~) AA: max. 40 mA (24 V =)
Measuring range temp.	-40..+60   0..+50   -20..+80   -15..+35 default setting: 0..+50 °C optionally configured via Thermokon USEapp
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50   0..80 g/m <sup>3</sup> dew point: 0..+50   -20..+80 °C optionally configured via Thermokon USEapp
Measuring range CO <sub>2</sub>	0..2000 ppm, 0..5000 ppm (optionally configured via Thermokon USEapp)
Accuracy temperature	3xV   4xV: ±1% of measuring range (typ. at 21 °C)
Accuracy humidity	4xV: ±2% between 10..90% rH (typ. at 21 °C)
Accuracy CO <sub>2</sub>	±75 ppm, >750 ppm: ±10% (typ. at 21 °C)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration, CO <sub>2</sub> : Dual Channel
Sensor	VOC sensor (heated metal oxide semiconductor) CO <sub>2</sub> : NDIR (non-dispersive, infrared)
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm BUS: seal insert for double cable entry for wire max Ø=6 mm removable (only enclosure USE)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pipe	PA6, black, Ø=19,5 mm, length 180 mm
Filter	stainless steel wire mesh
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	USE-M: installation is also possible using mounting base



## LK+ CO2+VOC

Delivery contents	MF20 flange included
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue ...)

Item description: product | output

Duct sensor CO2 + VOC or mix – active 2x 0..10 V   2x 4..20 mA				AQ2
Item description	USEapp	Item no.	On stock	€
LK+ CO2+VOC VV		662024	⊖	339,30
LK+ CO2+VOC AA	✓	662031		339,30

Duct sensor CO2 + VOC + temp +rH (opt.) or mix – active 3x/4x 0..10 V				AQ2
Item description	USEapp	Item no.		€
LK+ CO2+VOC 3xV	✓	662130		357,80
LK+ CO2+VOC 4xV	✓	662154		406,10

Duct sensor CO2 + VOC or mix – active 2x 0..10 V + relay				AQ1
Item description	USEapp	Item no.		€
LK+ CO2+VOC VV relay	✓	662062		378,30

Duct sensor with display CO2 + VOC + temp (opt.) + rH (opt.) or mix – active 2x/3x/4x 0..10 V   2x 4..20 mA   relay				AQ1
Item description	USEapp	Item no.		€
LK+ CO2+VOC LCD VV	✓	662079		388,30
LK+ CO2+VOC LCD AA	✓	662086		388,30
LK+ CO2+VOC LCD VV relay	✓	662093		408,30
LK+ CO2+VOC LCD 3xV	✓	662147		406,80
LK+ CO2+VOC LCD 4xV	✓	662161		455,10

Options	
Item description	€
Additional passive temperature sensor (for AA VV)	14,30

Item description: product | measuring values | output (BUS)

## LK+ CO2+VOC



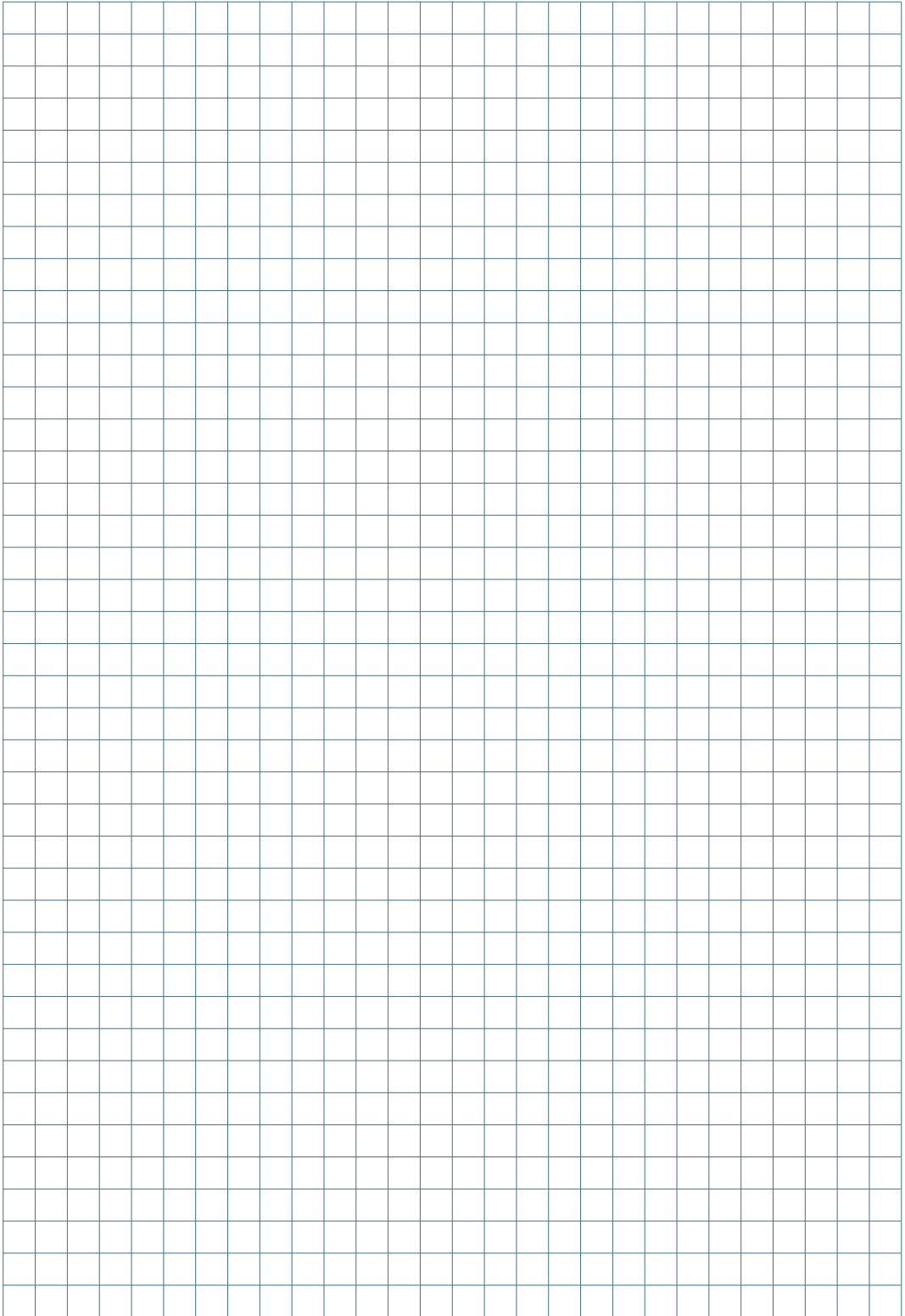
Duct sensor (opt. with display) CO2 + VOC or mix – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2+VOC RS485 Modbus	✓	662109	381,30	
LK+ CO2+VOC LCD RS485 Modbus	✓	662116	430,30	

Duct sensor (opt. with display) CO2 + VOC + temp or mix – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2+VOC Temp RS485 Modbus	✓	662178	399,80	
LK+ CO2+VOC LCD Temp RS485 Modbus	✓	662185	448,80	

Duct sensor (opt. with display) CO2 + VOC + temp +rH or mix – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2+VOC Temp_rH RS485 Modbus	✓	662192	448,10	
LK+ CO2+VOC LCD Temp_rH RS485 Modbus	✓	662208	497,10	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-M pure white	668354	⊕	7,85	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊕	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"





LK+ CO2



LK+ CO2 LCD



LK-S CO2 BACnet MS/TP / LON

## LK+ CO2

Duct air quality sensor for detection of CO<sub>2</sub>, optional with temperature and humidity. Designed for duct mounted applications with up to 3 0..10 V outputs or connection to a BUS system. Replaces LK-SX CO2 and LK-S CO2 in the newly developed enclosure USE-M (BACnet/LON: enclosure PA6, pure white, with quick lock screws).

### TECHNICAL DATA

Measuring values	CO <sub>2</sub> , temperature + humidity (depending on the device)
Output voltage	2x/3x 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) VV: 2x 0..10 V or 0..5 V
Output Amp	AA: 2x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A
Network technology	BACnet MS/TP, LON FT (free topology), RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%)
Power consumption	max. 1,5 W (24 V =)   2,9 VA (24 V ~) AA: max. 40 mA (24 V =) BACnet/LON: max. 3 W (24 V =)   6 VA (24 V ~)
Measuring range temp.	-40..+60   0..+50   -20..+80   -15..+35 default setting: 0..+50 °C optionally configured via Thermokon USEapp BACnet/LON: 0..+50 °C
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50   0..80 g/m <sup>3</sup> dew point: 0..+50   -20..+80 °C optionally configured via Thermokon USEapp
Measuring range CO <sub>2</sub>	0..2000 ppm, 0..5000 ppm (optionally configured via Thermokon USEapp)
Accuracy temperature	±1% of measuring range (typ. at 21 °C) LON: ±0,5 K (typ. at 21 °C) (optional)
Accuracy humidity	±2% between 10..90% rH (typ. at 21 °C) (optional)
Accuracy CO <sub>2</sub>	±75 ppm, >750 ppm: ±10% (typ. at 21 °C)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration, Dual Channel
Sensor	CO <sub>2</sub> : NDIR (non-dispersive, infrared)
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent with removable cable entry BACnet/LON: PA6, pure white, with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm BUS: seal insert for double cable entry for wire max Ø=6 mm removable (only enclosure USE)
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>



## LK+ CO2

	BACnet/LON: terminal block, max. 1,5 mm <sup>2</sup>
Pipe	PA6, black, Ø=19,5 mm, length 180 mm type V: length 150 mm
Filter	stainless steel wire mesh type V without filter
Ambient condition	0..+50 °C, max. 85% rH short term condensation
Mounting	USE-M: installation is also possible using mounting base
Delivery contents	MF20 flange included

Item description: product | output

Duct sensor CO2 + temp (opt.) + rH (opt.) - active 1x/2x/3x 0..10 V   2x 4..20 mA				AQ2
Item description	USEapp	Item no.	On stock	€
LK+ CO2 V		662253	⊕	211,80
LK+ CO2 VV		662260	⊕	267,30
LK+ CO2 AA	✓	662277		267,30
LK+ CO2 3xV	✓	662321		318,70

Duct sensor CO2 + temp - active 2x 0..10 V + relay				AQ1
Item description	USEapp	Item no.	On stock	€
LK+ CO2 VV relay	✓	662307		306,30

Duct sensor with display CO2 + temp + rH (opt.) - active 2x/3x 0..10 V   2x 4..20 mA   relay				AQ1
Item description	USEapp	Item no.	On stock	€
LK+ CO2 LCD VV	✓	662284	⊕	307,00
LK+ CO2 LCD AA	✓	662291		307,00
LK+ CO2 LCD VV relay	✓	662314		336,30
LK+ CO2 LCD 3xV	✓	662338		358,40

Options	
Item description	€
Additional passive temperature sensor (for AA VV)	14,30

## LK+ CO2



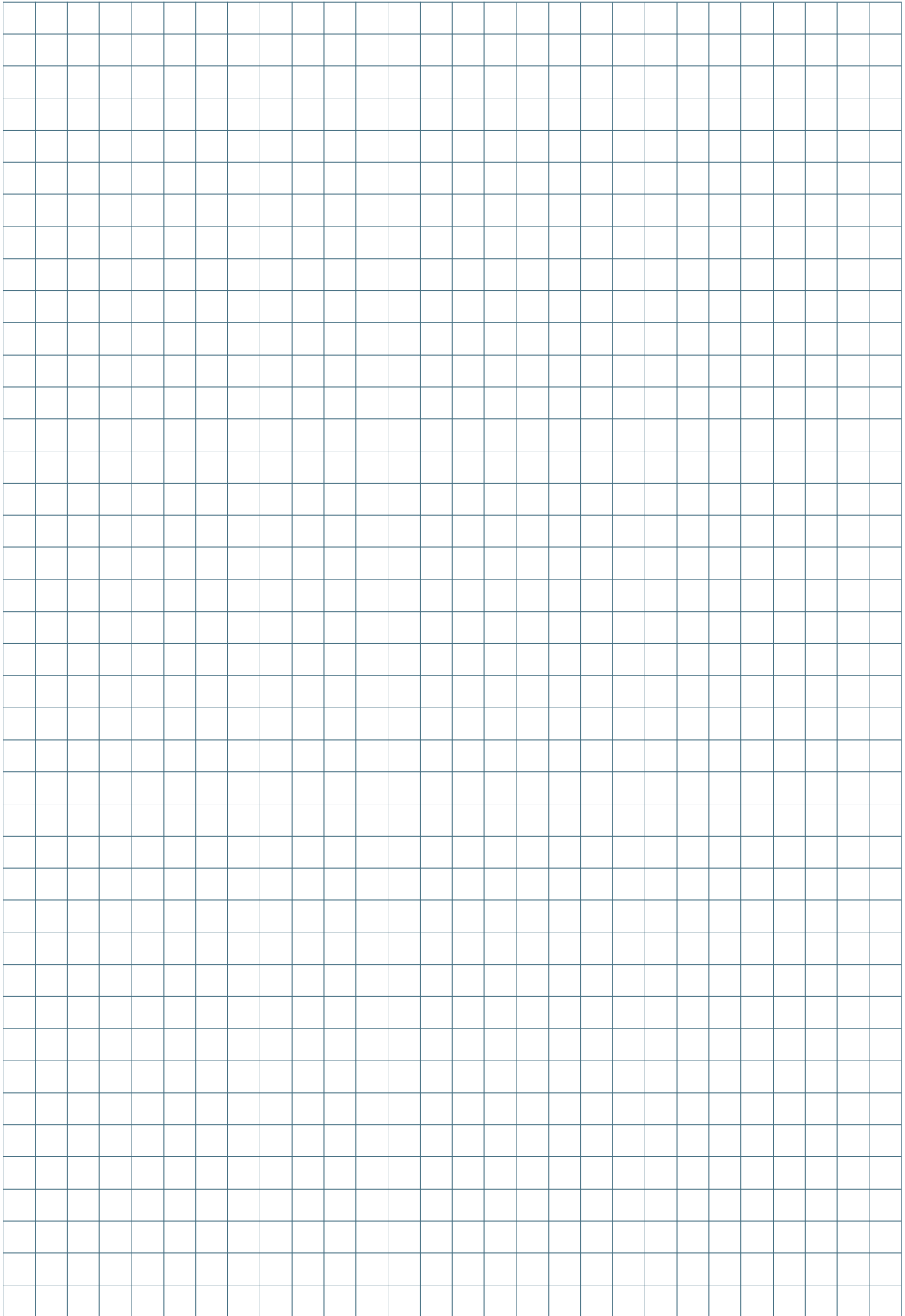
Duct sensor (opt. with display) CO2 + temp – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2 Temp RS485 Modbus	✓	662345	309,30	
LK+ CO2 LCD Temp RS485 Modbus	✓	662352	349,00	



Duct sensor (opt. with display) CO2 + temp +rH – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK-S CO2 BACnet MS/TP		548830	328,90	
LK-S CO2 LON		504966	342,20	
LK+ CO2 Temp_rH RS485 Modbus	✓	662376	360,70	
LK+ CO2 LCD Temp_rH RS485 Modbus	✓	662383	400,40	

Accessories				AS1
Item description	Item no.	On stock	€	
Mounting base enclosure USE-M pure white	668354	⊖	7,85	
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	⊖	29,00	

For cable entries and sealing inserts please refer to chapter "Accessories"





LK+ CO2 100



LK+ CO2 100 LCD



## LK+ CO2 100

Duct air quality sensor for measuring CO2 concentration, temperature (optional) as well as relative humidity (optional) in small air ducts with diameters  $\varnothing=100..125$  mm. Designed for duct mounted applications with up to 3 0..10 V outputs or connection to a BUS system.

### TECHNICAL DATA

Measuring values	CO2, temperature + humidity (depending on the device)
Output voltage	2x/3x 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) VV: 2x 0..10 V or 0..5 V
Output Amp	AA: 2x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ ( $\pm 20\%$ ) AA: 15..24 V = ( $\pm 10\%$ )
Power consumption	max. 1,5 W (24 V =)   2,9 VA (24 V ~) AA: max. 40 mA (24 V =)
Measuring range temp.	-40..+60   0..+50   -20..+80   -15..+35 default setting: 0..+50 °C optionally configured via Thermokon USEapp
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50   0..80 g/m <sup>3</sup> dew point: 0..+50   -20..+80 °C optionally configured via Thermokon USEapp (optional)
Measuring range CO2	0..2000 ppm, 0..5000 ppm (optionally configured via Thermokon USEapp)
Accuracy temperature	$\pm 1\%$ of measuring range (typ. at 21 °C) (optional)
Accuracy humidity	$\pm 2\%$ between 10..90% rH (typ. at 21 °C) (optional)
Accuracy CO2	$\pm 75$ ppm, $>750$ ppm: $\pm 10\%$ (typ. at 21 °C)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration, Dual Channel
Sensor	CO2: NDIR (non-dispersive, infrared)
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. $\varnothing=8$ mm BUS: seal insert for double cable entry for wire max $\varnothing=6$ mm removable
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pipe	PA6, $\varnothing=19,5$ mm, length 100 mm type V: length 70 mm
Filter	stainless steel wire mesh, type V without filter
Ambient condition	0..+50 °C max. 85% rH short term condensation
Mounting	USE-M: installation is also possible using mounting base
Delivery contents	MF20 flange included



## LK+ CO2 100

Item description: product | output

Duct sensor short CO2 + temp (opt.) + rH (opt.) – active 1x/2x/3x 0..10 V   2x 4..20 mA				AQ2
Item description	USEapp	Item no.	€	
LK+ CO2 100 V		670418	211,80	
LK+ CO2 100 VV		670432	267,30	
LK+ CO2 100 AA	✓	670449	267,30	
LK+ CO2 100 3xV	✓	670494	318,70	

Duct sensor short CO2 + temp – active 2x 0..10 V + relay				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2 100 VV relay	✓	670456	306,30	

Duct sensor short with display CO2 + temp + rH (opt.) – active 2x/3x 0..10 V   2x 4..20 mA   relay				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2 100 LCD VV	✓	670463	307,00	
LK+ CO2 100 LCD AA	✓	670470	307,00	
LK+ CO2 100 LCD VV relay	✓	670487	336,30	
LK+ CO2 100 LCD 3xV	✓	670500	358,40	

Options		
Item description		€
Additional passive temperature sensor (for AA VV)		14,30

Item description: product | output (BUS)



Duct sensor short (opt. with display) CO2 + temp – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2 100 Temp RS485 Modbus	✓	670555	309,30	
LK+ CO2 100 LCD Temp RS485 Modbus	✓	670562	349,00	

Duct sensor short (opt. with display) CO2 + temp +rH – active BUS				AQ1
Item description	USEapp	Item no.	€	
LK+ CO2 100 Temp_rH RS485 Modbus	✓	670579	360,70	
LK+ CO2 100 LCD Temp_rH RS485 Modbus	✓	670586	400,40	

Accessories				AS1
Item description		Item no.	On stock	€
Mounting base enclosure USE-M pure white		668354	☐	7,85
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)		668262	☐	29,00

For cable entries and sealing inserts please refer to chapter "Accessories"



LK+ VOC



LK+ VOC LCD



## LK+ VOC

Duct air quality sensor for detection of VOC air quality (optional temperature and humidity combined in one unit). Designed for duct mounted applications with up to 3 0..10 V outputs. The sensor consists of a transmitter with VOC sensor, based on a heated tin oxide semiconductor (VOC = volatile organic compound). Replaces LK-SX VOC in the newly developed enclosure USE-M.

### TECHNICAL DATA

Measuring values	VOC, temperature + humidity (depending on the device)
Output voltage	2x/3x 0..10 V or 1..10 V or 0..5 V (can be configured via Thermokon USEapp) VV: 2x 0..10 V or 0..5 V
Output Amp	AA: 2x 4..20 mA
Output switch contact	Relay: floating contact NO for 24 V ~ or 24 V = / 2x 3 A
Network technology	RS485 Modbus
Power supply	24 V = or 24 V ~ (±20%) AA: 15..24 V = (±10%)
Power consumption	max. 1,5 W (24 V =)   2,9 VA (24 V ~) AA: max. 40 mA (24 V =)
Measuring range temp.	-40..+60   0..+50   -20..+80   -15..+35 default setting: 0..+50 °C optionally configured via Thermokon USEapp
Measuring range humidity	0..100% rH non-condensing enthalpy: 0..85 KJ/kg absolute humidity: 0..50   0..80 g/m <sup>3</sup> dew point: 0..+50   -20..+80 °C optionally configured via Thermokon USEapp
Accuracy temperature	VV   AA   3xV: ±1% of measuring range (typ. at 21 °C)
Accuracy humidity	3xV: ±2% between 10..90% rH (typ. at 21 °C)
Air speed	min. 0,3 m/s, max. 12 m/s
Calibration	self-calibration
Sensor	VOC sensor (heated metal oxide semiconductor)
Display	LCD 29x35 mm with RGB backlight (optional)
Enclosure	enclosure USE-M, PC, pure white LCD: cover PC, transparent with removable cable entry
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	removable plug-in terminal, max. 2,5 mm <sup>2</sup>
Pipe	PA6, black, Ø=19,5 mm, length 180 mm type V: length 150 mm
Filter	stainless steel wire mesh, type V without filter
Ambient condition	0..+50 °C max. 85% rH short term condensation
Mounting	USE-M: installation is also possible using mounting base
Delivery contents	MF20 flange included
Notes	mixed gas sensors detect gases and vapours which can be oxidised (burnt): Body odours, tobacco smoke, exhalations emitted by materials (furniture, carpets, paint, glue...)

## LK+ VOC

Item description: product | output

Duct sensor VOC + temp (opt.) + rH (opt.) – active 1x/2x/3x 0..10 V   2x 4..20 mA				AQ2
Item description	USEapp	Item no.	On stock	€
LK+ VOC V		662413	⊖	193,30
LK+ VOC VV		662437	⊖	248,80
LK+ VOC AA	✓	662444		248,80
LK+ VOC 3xV	✓	662505		300,20

Duct sensor with display VOC + temp + rH (opt.) – active 2x/3x 0..10 V   2x 4..20 mA   relay				AQ1
Item description	USEapp	Item no.		€
LK+ VOC LCD VV	✓	662468		288,50
LK+ VOC LCD AA	✓	662482		288,50
LK+ VOC LCD VV relay	✓	662499		317,80
LK+ VOC LCD 3xV	✓	662529		339,90

Duct sensor VOC + temp – active 2x 0..10 V + relay				AQ1
Item description	USEapp	Item no.		€
LK+ VOC VV relay	✓	662475		287,80

Options			
Item description			€
Additional passive temperature sensor (for AA VV)			14,30

Item description: product | output (BUS)

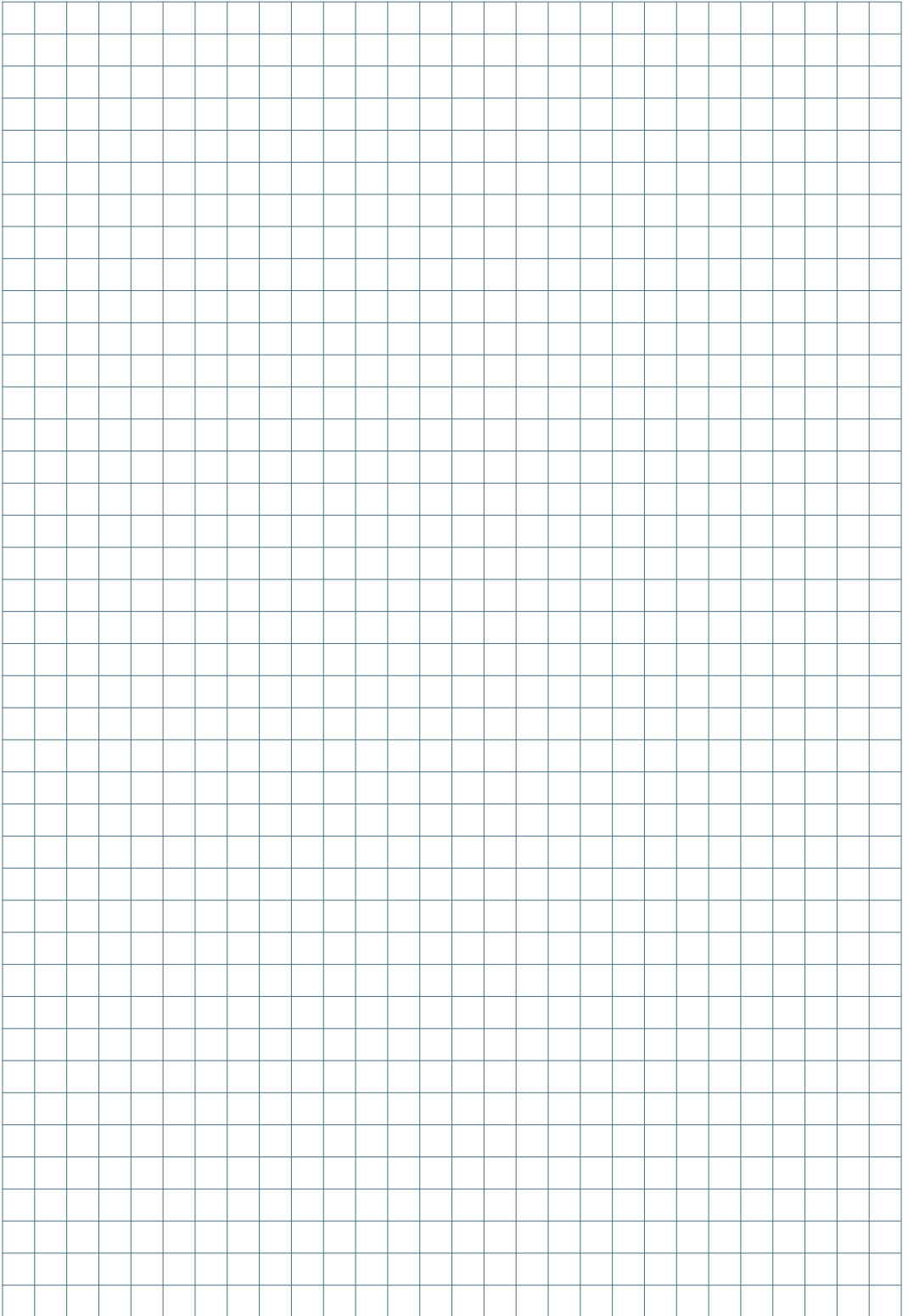


Duct sensor (opt. with display) VOC + temp – active BUS				AQ1
Item description	USEapp	Item no.		€
LK+ VOC Temp RS485 Modbus	✓	662536		290,80
LK+ VOC LCD Temp RS485 Modbus	✓	662550		330,50

Duct sensor (opt. with display) VOC + temp +rH – active BUS				AQ1
Item description	USEapp	Item no.		€
LK+ VOC Temp_rH RS485 Modbus	✓	662574		342,20
LK+ VOC LCD Temp_rH RS485 Modbus	✓	662581		381,90

Accessories				AS1
Item description		Item no.	On stock	€
Mounting base enclosure USE-M pure white		668354	⊖	7,85
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)		668262	⊖	29,00

For cable entries and sealing inserts please refer to chapter "Accessories"



# Light & Motion

Our intelligent sensors provide for a physical and emotional well-being of people in rooms. Motion and brightness are detected reliably: For individual, comfortable and increased energy-saving.



## Sample applications 327

### Ceiling sensors

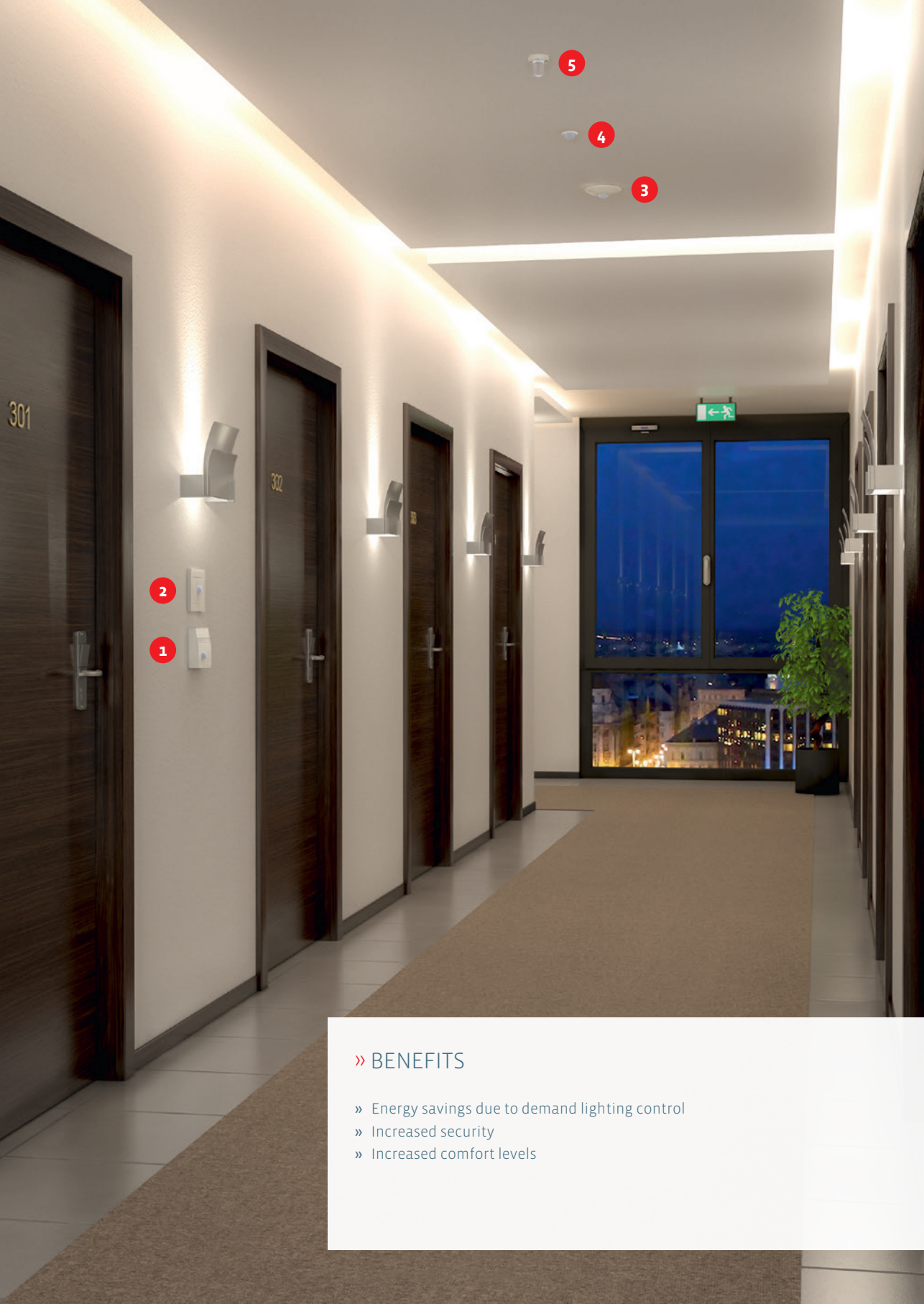
MDS	Ceiling sensor light + motion	328
RDI	Ceiling sensor motion	329
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### Wall sensors

WRF04I	Surface mount motion sensor	332
WRF06I	Flush mount motion sensor	333
Li04	Surface mount light sensor	334

### Outdoor sensors

Li65	Outdoor light sensor	335
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## » BENEFITS

- » Energy savings due to demand lighting control
- » Increased security
- » Increased comfort levels



1

**WRF04I**

Surface-mounted motion sensor, available with LON interface



2

**WRF06I**

Flush-mounted motion sensor, compatible with switch frames 55x55 mm



3

**MDS**

Ceiling-mounted multi sensor light/motion, available with LON interface



4

**RDI**

Ceiling-mounted motion sensor, available with various detection ranges



5

**LDF**

Ceiling-mounted light sensor, available with LON interface



## HOTEL SECURITY AND ENERGY-EFFICIENCY

Intelligent light, motion and multi sensors reliably detect light and motion and define the lighting control conditions. The guest feels safe and comfortable, the hotel owner saves energy.



MDS



## MDS

Ceiling mounted multi sensor designed for measuring light and motion in room and offices spaces and typically used in lighting applications to optimize energy efficiency through lighting control. Low profile design with various output signals compatible to all BMS manufacturers.

### TECHNICAL DATA

Measuring values	light, motion
Output voltage	Standard: 1x 0..10 V
Output switch contact	Standard: floating contact NO selectable at the device with follow-up time 1 second..30 minutes
Network technology	LON FT (free topology)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	Standard: typ. 1,2 W (24 V =)   4 VA (24 V ~) LON: typ. 1,5 W (24 V =)   4,2 VA (24 V ~)
Measuring range light	0..1 kLux
Accuracy Light	±50 Lux
Sensor	PIR (passive infrared)
Enclosure	ABS, pure white
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> pluggable
Ambient condition	0..+50 °C, max. 85% rH non-condensing
Notes	Enclosure for surface mounting available

Ceiling multi sensor light + motion – active 0..10 V (light), relay (motion)						LM2
Item description	0..10 V	Relay	Item no.	On stock	€	
MDS Standard	1	1	271318	⊕	178,70	



Ceiling multi sensor light + motion – active BUS					LM1
Item description	Item no.	On stock	€		
MDS LON	279000	⊕	237,80		

Accessories					AS1
Item description	Item no.	On stock	€		
Enclosure for surface mounting MDS pure white	448512	⊕	48,20		





RDI

## RDI

Ceiling mounted occupancy sensor for room and office spaces. Low profile, discrete design.

### TECHNICAL DATA

Measuring values	motion
Output switch contact	floating contact NO for 24 V load max. 1 A (resistive) with follow-up time 8 seconds
Power supply	15..24 V = ( $\pm 10\%$ ) or 24 V ~ ( $\pm 10\%$ )
Power consumption	typ. 0,5 W (24 V =)   1,1 VA (24 V ~)
Detection range	Standard: Cone-shaped detection range, angle 100°/82° (H/V), range 5 m, 64 detection zones. With an installation height of 2,8 m range detection will be 7x5 m.  Small Range: Cone-shaped detection range, angle 91°, range 2 m, 104 detection zones. With an installation height of 2 m circular detection range will have a R= 5 m.  Spot: Cone-shaped detection range, angle 38°/22° (H/V), range 5 m, 24 detection zones. With an installation height of 2,8 m range detection will be approx. 2x1,4 m.
Sensor	PIR (passive infrared)
Enclosure	ABS, pure white
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup> connection wire PVC diameter=0,25 mm <sup>2</sup> length=10 cm
Ambient condition	-20..+50 °C, max. 85% rH non-condensing

### Ceiling sensor motion – active relay

Item description	Item no.	On stock	LM2	€
RDI Standard	187060	●		87,70
RDI Small Range	426503			87,70
RDI Spot	436670			87,70



LDF straight prism



LDF diagonal prism

## LDF

Ceiling mounted light sensor with straight and diagonal prism options. Integrated colour (green) filter, which simulates the sensitivity of the human eye.

### TECHNICAL DATA

Measuring values	light
Output voltage	V: 1x 0..10 V
Output Amp	A: 1x 4..20 mA
Network technology	LON FT (free topology)
Power supply	V   LON: 15..24 V = ( $\pm 10\%$ ) oder 24 V ~ ( $\pm 10\%$ ) A: 15..24 V = ( $\pm 10\%$ )
Power consumption	V: typ. 0,15 W (24 V =)   0,5 VA (24 V ~) A: max. 20 mA (24 V =) LON: typ. 0,5 W (24 V =)   2 VA (24 V ~)
Measuring range light	0..2 kLux 0..20 kLux selectable at the device
Accuracy Light	$\pm 5\%$ of measuring range
Sensor	photodiode with green filter (BPW21)
Prism	acrylic glass clear straight diagonal
Enclosure	PA6, pure white
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. $\varnothing=8$ mm
Connection electrical	Connection wire PVC screened diameter=0,25 mm <sup>2</sup> , length=1 m (standard), 2 m
Ambient condition	-25..+65 °C, max. 85% rH non-condensing
Notes	please contact us for other ranges.



## LDF

Item description: product | output (V/A) | cable length (L) | prism shape

Ceiling sensor light – active V 0..10 V   A 4..20 mA			LM2
Item description	Item no.	€	
LDF V L1000 straight prism	185714	126,90	
LDF V L1000 diagonal prism	201568	126,90	
LDF A L1000 straight prism	185721	126,90	
LDF A L1000 diagonal prism	201575	126,90	

Item description: product | BUS | cable length (L) | prism shape



Ceiling sensor light – active BUS			LM1
Item description	Item no.	€	
LDF LON L1000 straight prism	185707	223,60	
LDF LON L1000 diagonal prism	201582	223,60	

Options	
Item description	€
Add per meter of connection cable (LDF/LDF+)	1,80

Order example for different items:

**LDF | V | L2000 | straight prism**

**LDF** = product  
**V** = 1x0..10 V output  
**L2000** = cable length (mm)  
**straight prism** = prism shape



WRF041



## WRF041

Room mounted occupancy sensor for room and office applications. Various outputs compatible to all BMS manufacturers.

### TECHNICAL DATA

Measuring values	motion
Output switch contact	floating contact NO for 24 V load max. 1 A (resistive) with follow-up time 8 seconds
Network technology	LON FT (free topology)
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	Relay: typ. 0,5 W (24 V =)   1,1 VA (24 V ~) LON: max. 0,9 W (24 V =)   2,5 VA (24 V ~)
Detection range	Cone-shaped detection range, angle 100°/82° (H/V), range 5 m, 64 detection zones. With an installation height of 2,8 m range detection will be 7x5 m.
Sensor	PIR (passive infrared)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-5..+50 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm)

Item description: product | output (relay/BUS)

Wall sensor motion – active relay   BUS				LM1
Item description	Relay	Item no.	On stock	€
WRF041 Relay	1	195812	⊕	91,80
WRF041 LON	-	199476		161,40

Accessories				AS1
Item description	Item no.	On stock	€	
Rawplugs and screws (2 pcs. each)	102209	⊕	0,80	
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊕	42,00	
Frame for surface mounting WRF04	111584	⊕	12,40	



## WRF06I

Flush mounted room occupancy sensor for room and office applications. Various outputs compatible to all BMS manufacturers.



WRF06I,  
Gira E2 pure white



WRF06I,  
Jung AS 500 alpine white

### TECHNICAL DATA

Measuring values	motion
Output switch contact	floating contact NO for 24 V load max. 1 A (resistive) with follow-up time 8 seconds
Power supply	15..24 V = (±10%) or 24 V ~ (±10%)
Power consumption	max. 0,5 W (24 V =)   1,1 VA (24 V ~)
Detection range	range max. 10 m horizontal 110°, vertical 93°, 80 zones
Sensor	PIR (passive infrared)
Switch range Berker	S.1, B.3 aluminum, B.7 glass, Q.1, Q.3, K.1, K.5 aluminum   stainless steel
Switch range Busch-Jaeger	Busch-balance® SI, Busch-Duro 2000® SI, Reflex SI, solo®, future® linear, impuls, Busch-axcent®, alpha nea®
Switch range Feller	EDIZIODue
Switch range Gira	E2, E3, Standard 55, Esprit, Event, F100
Switch range Jung	LS 990, A 500, AS 500, A plus, A creation, CD 500
Switch range Merten	M-Smart, M-Arc, M-Plan, 1-M, Atelier-M, M-Pure, Artec, Artec stainless steel, Antique
Switch range Peha	Aura, Aura glass
Protection	IP30 according to EN 60529
Connection electrical	plug-in terminal, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+60 °C, max. 85% rH non-condensing
Mounting	flush mounted in standard EU box (Ø=55 mm)

Item description: product | switch range | colour

Wall sensor motion – active relay		LM2
Item description	Item no.	€
WRF06I Gira E2 pure white	187183	104,30
WRF06I Berker S.1 polar white	223997	104,30
WRF06I Busch-Jaeger Balance SI alpine white	630405	104,30
WRF06I Busch-Jaeger Reflex SI alpine white	413350	104,30
WRF06I Jung A 500 alpine white	630412	104,30
WRF06I Merten M-Smart polar white brilliant	630429	104,30

Options		€
Item description		€
Switch range Gira Esprit		22,30
Switch ranges stainless steel   glass   aluminium (different manufacturers)		35,10
Other switch ranges		12,50

Accessories		AS1
Item description	Item no.	On stock
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊕ 42,00



Li04



## Li04

Surface mounted light sensor for room and office spaces, typically used in lighting applications to optimise energy efficiency through lighting control.

### TECHNICAL DATA

Measuring values	light
Output voltage	V: 1x 0..10 V, min. load 5 kΩ
Output Amp	A: 1x 4..20 mA, max. load 500 Ω
Network technology	LON FT (free topology)
Power supply	V   LON: 15..24 V = (±10%) oder 24 V ~ (±10%) A: 15..24 V = (±10%)
Power consumption	V: typ. 0,15 W (24 V =)   0,5 VA (24 V ~) A: max. 20 mA (24 V =) LON: typ. 0,5 W (24 V =)   2 VA (24 V ~)
Measuring range light	0..2 kLux, 0..20 kLux, 0..100 kLux selectable at the device
Accuracy Light	±5% of measuring range
Sensor	photodiode with green filter (BPW21)
Enclosure	PC, pure white
Protection	IP30 according to EN 60529
Cable entry	breaking points top/bottom rear entry
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-20..+70 °C, max. 85% rH non-condensing
Mounting	surface mounted on flush-mounting box (Ø=55 mm) base part can be mounted and wired separately

Item description: product | output (V/A/BUS)

Wall sensor light – active V 0..10 V   A 4..20 mA						LM2
Item description	0..10 V	4..20 mA	Item no.	On stock	€	
Li04 V	1	-	207904	⊕	126,90	
Li04 A	-	1	207911		126,90	



Wall sensor light – active BUS				LM1
Item description		Item no.		€
Li04 LON		207898		223,60

Accessories				AS1
Item description		Item no.	On stock	€
Rawplugs and screws (2 pcs. each)		102209	⊕	0,80
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)		645737	⊕	42,00
Frame for surface mounting WRF04		111584	⊕	12,40



Li65



## Li65

Outdoor light sensor typically used in lighting applications to optimise energy efficiency through lighting control. Integrated colour (green) filter, which simulates the sensitivity of the human eye.

TECHNICAL DATA	
Measuring values	light
Output voltage	V: 1x 0..10 V, min. load 5 kΩ
Output Amp	A: 1x 4..20 mA, max. load 500 Ω
Network technology	LON FT (free topology)
Power supply	V   LON: 15..24 V = (±10%) oder 24 V ~ (±10%) A: 15..24 V = (±10%)
Power consumption	V: typ. 0,15 W (24 V =)   0,5 VA (24 V ~) A: max. 20 mA (24 V =) LON: typ. 0,5 W (24 V =)   2 VA (24 V ~)
Measuring range light	0..2 kLux   0..20 kLux   0..100 kLux, LON: 0..2 kLux   0..20 kLux   0..65 kLux, selectable at the device
Accuracy Light	±5% of measuring range
Sensor	photodiode with green filter (BPW21)
Enclosure	PA6, pure white cover PC, translucent with quick lock screws
Protection	IP65 according to EN 60529
Cable entry	M20 for wire max. Ø=8 mm
Connection electrical	terminal block, max. 1,5 mm <sup>2</sup>
Ambient condition	-30..+70 °C, max. 85% rH short term condensation
Notes	please contact us for other ranges.

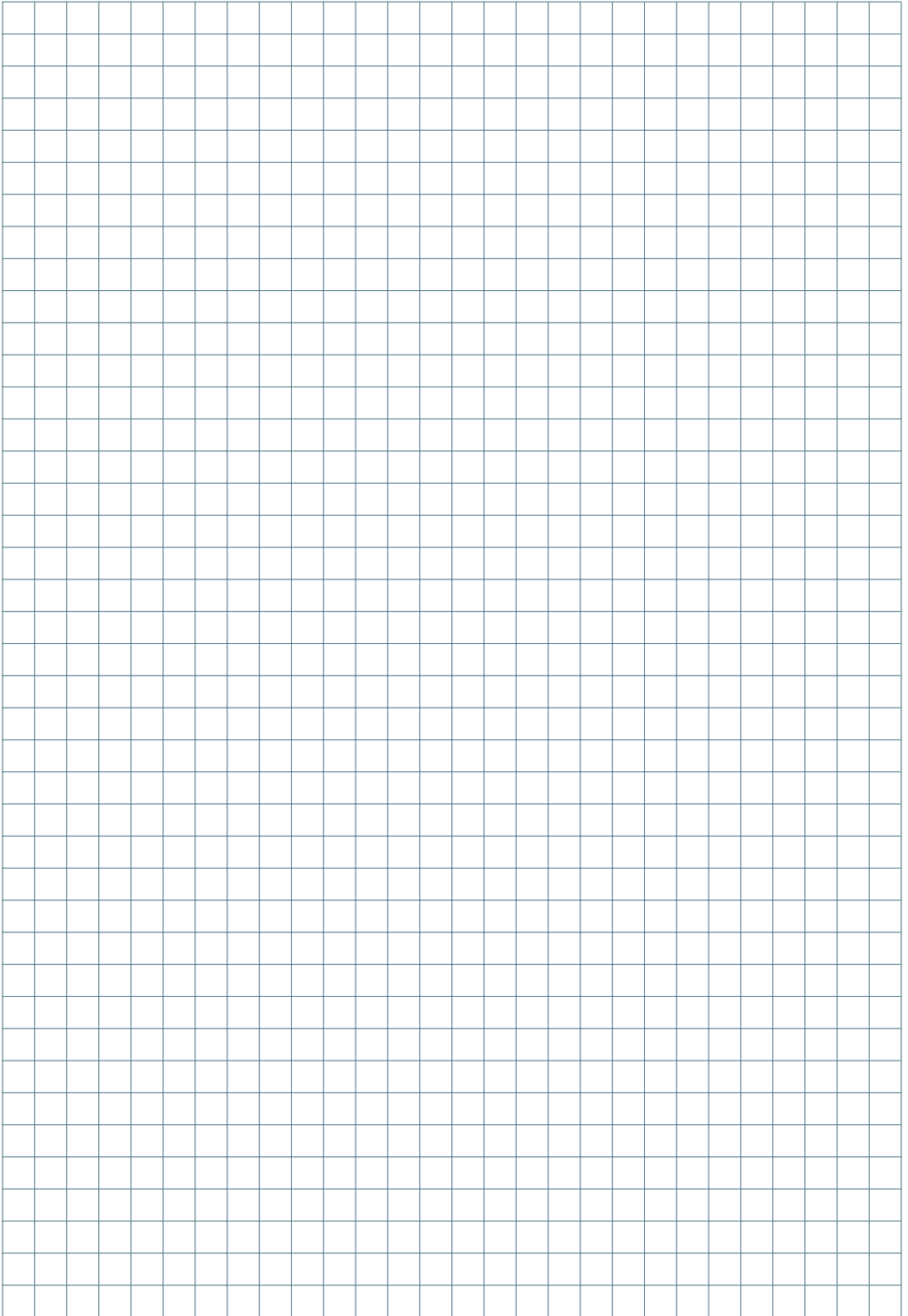
Item description: product | output (V/A/BUS)

Outdoor sensor light – active V 0..10 V   A 4..20 mA					LM2
Item description	0..10 V	4..20 mA	Item no.	On stock	€
Li65 V	1	-	185776	●	126,90
Li65 A	-	1	185783	●	126,90



Outdoor sensor light – active BUS			LM1
Item description	Item no.		€
Li65 LON	185745		223,60

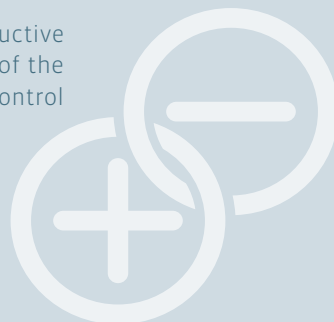
Accessories				AS1
Item description	Item no.	On stock		€
Rawplugs and screws (2 pcs. each)	102209	●		0,80





# Power Thyristors

Power thyristors can more and more be found where ohmic and inductive loads must be controlled (e.g. in industrial furnaces...) By means of the modular and compact construction and control with a continuous control signal power thyristors become the perfect actuators for industrial power control.



## Power Thyristors Single-phase

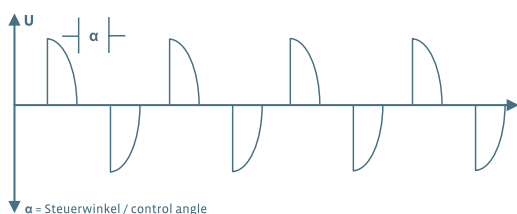
TS1 1-phase	Industrial power thyristor	<b>338</b>
TS3 1-phase	Industrial power thyristor	<b>339</b>
TS2 1-phase	Industrial power thyristor	<b>340</b>

## Triple-phase

TS1 3-phase	Industrial power thyristor	<b>341</b>
TS3 3-phase	Industrial power thyristor	<b>342</b>
TS2 3-phase	Industrial power thyristor	<b>343</b>

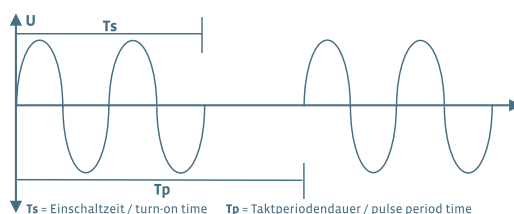
## Phase angle control

The phase angle control can be used for almost any ohmic and inductive consumers and is the most common way to control the power consumption of a consumer. The consumer is connected to the supply network via the power thyristor. The thyristors are controlled in such a way, that the consumer is not supplied with the complete sinusoidal oscillation but only a part (depending on the steering angle), whereas the voltage average value can be adjusted continuously.



## Oscillation control

The oscillation control is used with inert consumers such as heaters. Contrary to the phase angle control, complete sinusoidal waves are switched through to the consumer with the oscillation control. The control of the average voltage value is made by switching through a certain number of oscillations (depending on the switch-on time) within a certain time slot (clock cycle). Thus convertor feedback effects to the power supply network in form of harmonic components are avoided.





TS1 1-phase

## TS1 1-phase

Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and high efficiency.

### TECHNICAL DATA

Output switch contact	floating contact NO for 250 V ~ / 3 A or 24 V = / 3 A 2 A ..0,8 kW   4 A ..1,6 kW   6 A ..2,4 kW   8 A ..3,2 kW   10 A ..4,0 kW   12 A ..4,8 kW Output for ohmic and inductive loads: 2 A max. 0,5 kW   4 A max. 1,0 kW   6 A max. 1,5 kW   8 A max. 2,0 kW   10 A max. 2,5 kW   12 A max. 2,8 kW
Power supply	230 V ~
Power consumption	2 A: typ. 2,5 W   4 A: typ. 4,5 W   6 A: typ. 6,5 W   8 A: typ. 9,0 W   10 A: typ. 11,0 W   12 A: typ 13,0 W (230 V ~)
Inputs	set point signal 0..10 V = or 0..20 mA (selectable at the device) input for potentiometer 2,5..10 kΩ
Functions	phase angel, optional oscillation
Display	LED green – power supply OK LED green – modulation amplitude 100%
Enclosure	PA
Protection	IP40 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	types with more than 6 A have a dissipator

### Power thyristor – phase angel

Item description	Item no.	TR1 €
TS1 1-phase 1-ph 2A 0,5 kW	229678	163,00
TS1 1-phase 1-ph 4A 1,0 kW	226639	190,00
TS1 1-phase 1-ph 6A 1,5 kW	224000	221,00
TS1 1-phase 1-ph 8A 2,0 kW	236980	244,00
TS1 1-phase 1-ph 10A 2,5 kW	223874	263,00

### Power thyristor – oscillation

Item description	Item no.	TR1 €
TS1 1-phase SP 1-ph 2A 0,5 kW	283137	163,00
TS1 1-phase SP 1-ph 4 A 1,0 kW	226622	190,00
TS1 1-phase SP 1-ph 6 A 1,5 kW	238885	221,00
TS1 1-phase SP 1-ph 8 A 2,0 kW	255189	244,00
TS1 1-phase SP 1-ph 10 A 2,5 kW	266109	263,00



TS3 1-phase

## TS3 1-phase

Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and high efficiency.

TECHNICAL DATA	
Output switch contact	15 A ..3,5 kW   25 A ..5,75 kW   35 A ..8,05 kW   50 A ..11,5 kW
Inputs	control voltage: 230 V ~ set point signal 0..10 V input for potentiometer 10 kΩ
Functions	phase angel, optional oscillation
Display	fault indicator: undervoltage, error thyristor, temperature dissipator, failure phase
Enclosure	aluminium
Protection	IP40 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristor – phase angel		TR1
Item description	Item no.	€
TS3 1-phase 1-ph 15A 3,45 kW	237161	314,00
TS3 1-phase 1-ph 25A 5,75 kW	241649	446,00
TS3 1-phase 1-ph 35A 8,05 kW	238489	472,00
TS3 1-phase 1-ph 50A 11,50 kW	361200	547,00

Power thyristor – oscillation		TR1
Item description	Item no.	€
TS3 1-phase SP 1-ph 15A 3,45 kW	245500	314,00
TS3 1-phase SP 1-ph 25A 5,75 kW	231091	446,00
TS3 1-phase SP 1-ph 35A 8,05 kW	270977	472,00
TS3 1-phase SP 1-ph 50A 11,50 kW	344333	547,00



TS2 1-phase

## TS2 1-phase

Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and and high efficiency.

### TECHNICAL DATA

Output switch contact	75 A ..17,25 kW   90 A ..20,7 kW   120 A ..27,6 kW
Inputs	control voltage: 230 V ~ set point signal 0..10 V input for potentiometer 10 kΩ
Functions	phase angel, optional oscillation
Display	fault indicator: undervoltage, error thyristor, temperature dissipator, failure phase
Enclosure	aluminium with plexiglas cover
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristor – phase angel		TR1
Item description	Item no.	€
TS2 1-phase 1-ph 75A 17,25 kW	223867	1283,00
TS2 1-phase 1-ph 90A 20,70 kW	361484	1554,00
TS2 1-phase 1-ph 120A 27,60 kW	361491	1875,00

Power thyristor – oscillation		TR1
Item description	Item no.	€
TS2 1-phase SP 1-ph 75A17,25 kW	361453	1283,00
TS2 1-phase SP 1-ph 90A20,70 kW	361460	1554,00
TS2 1-phase SP 1-ph 120A27,60 kW	361477	1875,00



TS1 3-phase

## TS1 3-phase

Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and high efficiency.

TECHNICAL DATA	
Output switch contact	floating contact NO for 250 V ~ / 3 A or 24 V = / 3 A 2 A ..1,2 kW   4 A ..2,5 kW   6 A ..4,0 kW   8 A ..5,0 kW   10 A ..6,5 kW
Power consumption	2 A: typ. 7 W   4 A: typ. 13 W   6 A: typ. 19 W   8 A: typ. 25 W   10 A: typ. 31 W
Inputs	control voltage: 400 V ~ set point signal 0..10 V = or 0..20 mA (selectable at the device) input for potentiometer 2,5..10 kΩ
Functions	phase angel, optional oscillation
Display	LED green – power supply OK LED green – modulation amplitude 100%
Enclosure	PA
Protection	IP40 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715
Notes	types with more than 6 A have a dissipator

Power thyristor – phase angel		TR1
Item description	Item no.	€
TS1 3-phase 3-ph 2A 1,39 kW	230148	186,00
TS1 3-phase 3-ph 4A 2,77 kW	246514	205,00
TS1 3-phase 3-ph 6A 4,15 kW	224260	228,00
TS1 3-phase 3-ph 8A 5,54 kW	233736	252,00
TS1 3-phase 3-ph 10A 6,93 kW	224314	279,00

Power thyristor – oscillation		TR1
Item description	Item no.	€
TS1 3-phase SP 3-ph 2A 1,39 kW	273558	186,00
TS1 3-phase SP 3-ph 4A 2,77 kW	268226	205,00
TS1 3-phase SP 3-ph 6A 4,15 kW	275910	228,00
TS1 3-phase SP 3-ph 8A 5,54 kW	275927	252,00
TS1 3-phase SP 3-ph 10A 6,93 kW	241182	279,00



TS3 3-phase

## TS3 3-phase

Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and and high efficiency.

### TECHNICAL DATA

Output switch contact	15 A ..10,38 kW   25 A ..17,3 kW   35 A ..24,22 kW   50 A ..34,6 kW
Inputs	control voltage: 400 V ~ set point signal 0..10 V input for potentiometer 10 kΩ
Functions	phase angel, optional oscillation
Display	fault indicator: undervoltage, error thyristor, temperature dissipator, failure phase
Enclosure	aluminium
Protection	IP40 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristor – phase angel		TR1
Item description	Item no.	€
TS3 3-phase 3-ph 15A 10,38 kW	224796	611,00
TS3 3-phase 3-ph 25A 17,30 kW	225649	698,00
TS3 3-phase 3-ph 50A 34,60 kW	256353	909,00
TS3 3-phase 3-ph 35A 24,22 kW	225656	815,00

Power thyristor – oscillation		TR1
Item description	Item no.	€
TS3 3-phase SP 3-ph 15A 10,38 kW	225236	611,00
TS3 3-phase SP 3-ph 25A 17,30 kW	240970	698,00
TS3 3-phase SP 3-ph 35A 24,22 kW	241014	815,00
TS3 3-phase SP 3-ph 50A 34,60 kW	223836	909,00



TS2 3-phase

## TS2 3-phase

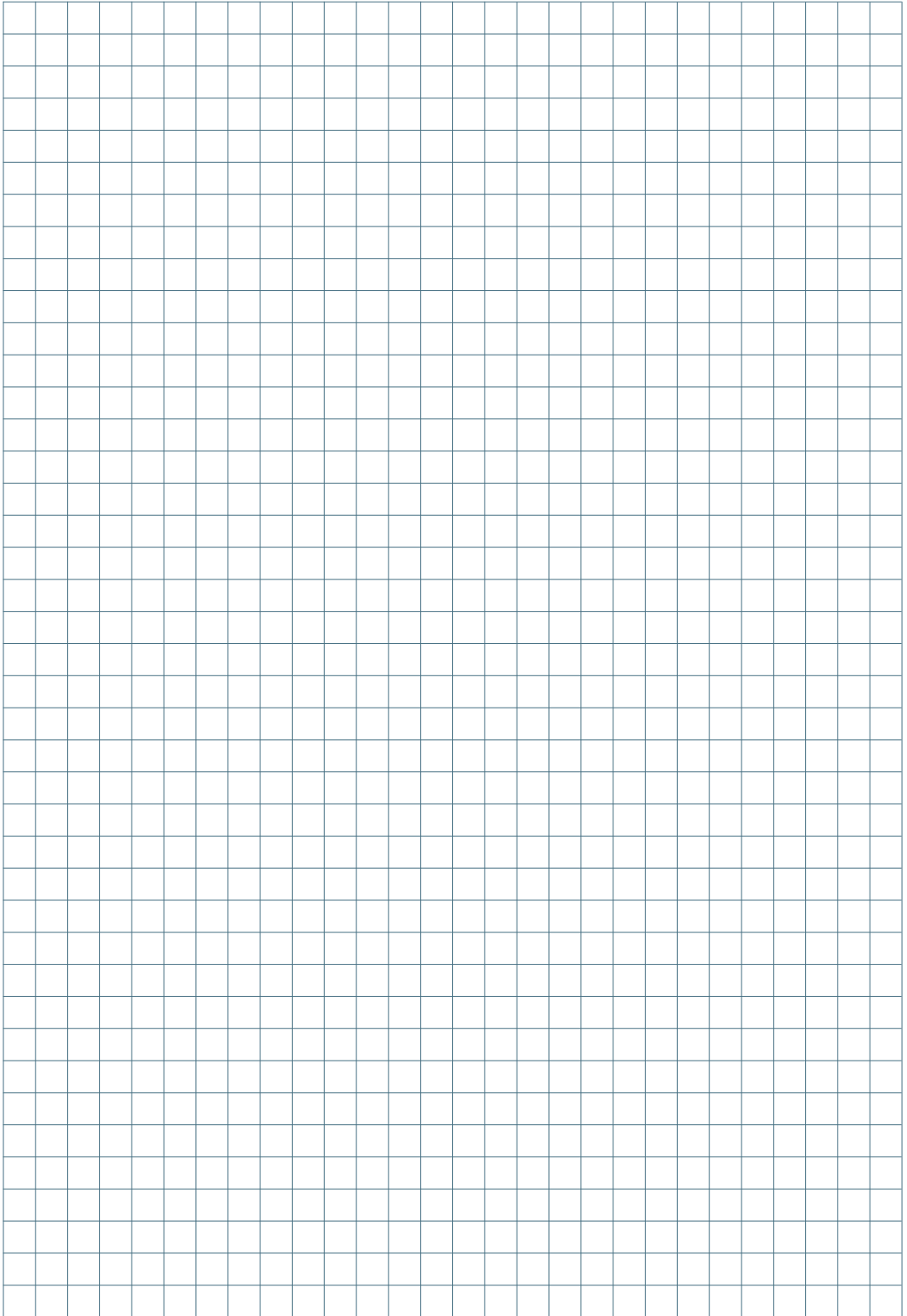
Power thyristors are used as actuators for industrial power controls (e.g. fans, pumps, lamps, heating registers, industrial furnaces). Their solid and compact construction ensures reliable control and high efficiency.

### TECHNICAL DATA

Output switch contact	75 A ..51,91 kW   90 A ..62,28 kW   120 A ..83,04 kW
Inputs	control voltage: 400 V ~ set point signal 0..10 V input for potentiometer 10 kΩ
Functions	phase angel, optional oscillation
Display	fault indicator: undervoltage, error thyristor, temperature dissipator, failure phase
Enclosure	aluminium with plexiglas cover
Protection	IP20 according to EN 60529
Connection electrical	terminal block, max. 2,5 mm <sup>2</sup>
Ambient condition	0..+45 °C
Mounting	prepared for mounting on DIN rail TS35 (35x7,5 mm) according to EN 60715

Power thyristor – phase angel		TR1
Item description	Item no.	€
TS2 3-phase 3-ph 75A 51,91 kW	236522	1490,00
TS2 3-phase 3-ph 90A 62,28 kW	260190	1754,00
TS2 3-phase 3-ph 120A 83,04 kW	304719	2007,00

Power thyristor – oscillation		TR1
Item description	Item no.	€
TS2 3-phase SP 3-ph 75A 51,91 kW	339094	1490,00
TS2 3-phase SP 3-ph 90A 62,28 kW	326926	1754,00
TS2 3-phase SP 3-ph 120A 83,04 kW	336482	2007,00





# Accessories Information



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## Special labelling/painting

Labeling according to your requirements – individualize your device with our special printings, special engravings or special lasering.

With a special painting, your device can be integrated technically and optically perfect into your project.

### Special printing (minimum order amount 20 pcs.)

Item description	€
Special printing – order quantity 20..49 pcs. (each per colour)	9,70
Special printing – order quantity 50..99 pcs. (each per colour)	6,55
Special printing – order quantity 100..249 pcs. (each per colour)	5,25
Special printing – order quantity 250..499 pcs. (each per colour)	4,00
Special printing – order quantity 500..1000 pcs. (each per colour)	2,00
Special printing setup and tool costs (once for one-colour print – net price)	160,00
Special printing setup and tool costs (once for two-colour print – net price)	245,00

### Special painting

Item description	€
Special painting – order quantity 1..9 pcs. (each)	22,40
Special painting – order quantity 10..49 pcs. (each)	15,40
Special painting – order quantity 50..100 pcs. (each)	11,20
Special painting setup costs (once per colour – net price)	160,00

### Special engraving / special lasering

Item description	€
Engraving/lasering – order quantity 1..5 pcs. (each)	49,30
Engraving/lasering – order quantity 6..10 pcs. (each)	35,90
Engraving/lasering – order quantity 11..20 pcs. (each)	26,90



## Communication interfaces



Bluetooth dongle to configure sensors via Thermokon USEapp.

All Thermokon devices with the USEapp logo can be comfortably set via Bluetooth (measuring ranges, measured values, limit values, BUS settings, ...) using mobile terminals.



Communication interface			
Item description	Item no.	On stock	€
Bluetooth dongle with micro-USB – communication between USEapp and devices USE-M/USE-L (net price)	668262	●	29,00



## Material test report 3.1 according to EN 10204



The material test report documents traceability to national standards, normal measuring devices and methods for representing the physical units in accordance with the international unit system and includes two tested measured values according to customer specifications.

Material test reports are assigned to one sensor and can be created for measured values in:

- temperature at range -30..+150 °C
- humidity at range 5..95% rH.

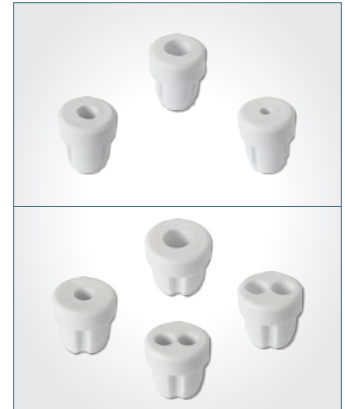
Material test report (please specify 2 measuring points)			
Item description	Item no.	On stock	€
Material test report 3.1 (EN 10204) temperature – 2 values within range -30..+150 °C (net price)	119030		45,00
Material test report 3.1 (EN 10204) humidity – 2 values within range 5..95% (net price)	665407		45,00



## Mounting accessories enclosure USE

In addition to the available mounting bases and the mounting clip for USE-S, which in most cases are included in the scope of supply of the device, cable entries M16, M20 and M25 with vari-

ous sealing inserts are available for enclosures USE. In addition, we offer a quick screw connection for a hose connection.



Replacement articles – mounting accessories USE			AS1
Item description	Item no.	On stock	€
Mounting clip enclosure USE-S pure white	667739	⊕	4,60
Mounting base enclosure USE-S pure white	667722	⊕	5,50
Mounting base enclosure USE-M pure white	668354	⊕	7,85
Mounting base enclosure USE-L pure white	668361	⊕	11,00

Accessories – cable entry and sealing inserts (M16)			AS1
Item description	Item no.	On stock	€
Cable entry M16 USE white, sealing insert Ø=8 mm (4 pcs)	641340	⊕	9,95
Sealing insert M16 USE white, Ø=7 mm (10 pcs)	639248	⊕	9,95
Sealing insert M16 USE white, Ø=5 mm (10 pcs)	641012	⊕	9,95
Sealing insert M16 USE white, Ø=3 mm (10 pcs)	641036	⊕	9,95
Quick-type connector plastic conduit M16x1,5 black, for cable entry M16 (5 pcs)	669634	⊕	29,90

Accessories – cable entry and sealing inserts (M20)			AS1
Item description	Item no.	On stock	€
Cable entry M20 USE white, sealing insert Ø=10 mm (4 pcs)	641357	⊕	9,95
Sealing insert M20 USE white, Ø=8 mm (10 pcs)	641081	⊕	9,95
Sealing insert M20 USE white, Ø=6 mm (10 pcs)	641074	⊕	9,95
Sealing insert M20 USE white, 2x Ø=7 mm (10 pcs)	641333	⊕	9,95
Sealing insert M20 USE white, 2x Ø=6 mm (10 pcs)	641319	⊕	9,95

Accessories – cable entry and sealing inserts (M25)			AS1
Item description	Item no.	On stock	€
Cable entry M25 USE white, sealing insert 4x Ø=7 mm (4 pcs)	641364	⊕	9,95



## Mounting accessories general



With the appropriate rawplugs and screws, you will be able to install your device quickly at the desired installation location.

With the surface frame for our enclosure series 04, you will have additional storage space for the connection wire.

Rawplugs and screws			AS1
Item description	Item no.	On stock	€
Rawplugs and screws (2 pcs. each)	102209	⊕	0,80

Frame for surface mounting			AS1
Item description	Item no.	On stock	€
Frame for surface mounting WRF04	111584	⊕	12,40



## Power supply



If only 230 V is available on the mounting site, all 24 V devices can be supplied with the flush-mounted power supply unit.

Power supply			AS1
Item description	Item no.	On stock	€
PSU-UP24 – flush mount power supply 24 V (195..265 V ~ -> 24 V =, 0,5 A)	645737	⊕	42,00



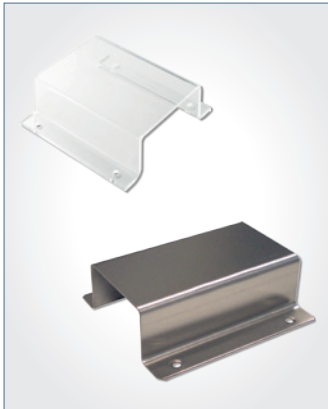
## Enclosure protection/enclosures

For protection against damage to the enclosure due to external influences and/or weather conditions, we offer the proper protection:

- Ball stroke protection BS150 – for enclosure series 04
- Sun/rain protection RS150 – for enclosure series 04

For alternative mounting we offer the following accessories:

- Enclosure for surface mounting MDS – for MDS



Enclosure Protection			AS1
Item description	Item no.	On stock	€
Ball stroke protection BS150, transparent (for series WRF04)	647007	⊖	22,70
Sun/rain protection RS150	103329	⊖	22,70

Enclosures			AS1
Item description	Item no.	On stock	€
Enclosure for surface mounting MDS pure white	448512	⊖	48,20



## airScan



Thermokon airScan consists of an USB transmitter/receiver with windows software to turn a windows personal computer to a field strength measuring tool. Measuring frequency ranges the tool is used to define best routing places for EnOcean transmitter and receiver. airScan gives a quick overview of EnOcean telegrams, reading status, ID, field strength and manufacturer for EnOcean products.

An optional USB extension for optimal positioning of the transmitter/receiver, even at the ceiling is available.

Accessories airScan			
Item description	Item no.	On stock	€
EnOcean usb transceiver for airConfig/airScan (incl. license - net price)	566704	⊕	100,80
USB extension 3 m (net price)	574044	⊕	13,40



## Accessories for antennas



Antenna extensions (10 m or 20 m) for convenient positioning of the antenna away from the receiver.

Magnetic antenna holder for easy positioning at an ideal position.

Accessories for antennas				AS1
Item description	Item no.	On stock	€	
Antenna extension 10 m	257206	⊕	56,10	
Antenna extension 20 m	257213	⊕	68,30	
Magnetic antenna holder form L, 180x180 mm (net price)	255097	⊕	14,30	



## Power supply

If the energy from solar cells is not sufficient, many EasySens® transmitter are equipped with an additional battery/coin cell holder.

Battery			AS1
Item description	Item no.	On stock	€
Battery LS14250	315098	☉	4,00
Coin cell CR1220 (replacement for SRW01 BAT)	347006	☉	4,00
Coin cell CR1632	597814	☉	4,00
Coin cell CR2032	347013	☉	4,00



## Software/Configuration

For the radio room operating unit SR06 LCD a programming interface is available to configure the device and to charge the energy storage.

All Thermokon devices with the airConfig logo can be configured comfortably via the software airConfig (free of charge, by download). This requires only an EnOcean USB transceiver to transmit the data from a computer to the device (bidirectional communication).

The configuration software for all Thermokon devices is free of charge and can be downloaded from the website in the newest version.

Software/Configuration			AS1
Item description	Item no.	On stock	€
Programming interface for configuration and charging (SR06 LCD)	597838	☉	34,80
airConfig (freeware, via download)			0,00
Software/Plug-In for configuration (free)			0,00





## Storage media



Our radio premium room operation unit thanos SR has a wide range of settings and the display can show graphics. The required data are stored on a suitable SD card. One card is already included in the scope of delivery. Further SD cards are available as accessories.

Storage media			AS1
Item description	Item no.	On stock	€
SD card (2 GB)	500098	⊕	11,30



## Mounting



Mounting accessories for radio multi-sensor sensor SR-MDS for hollow ceiling installation.

Mounting			AS1
Item description	Item no.	On stock	€
Enclosure for surface mounting SR-MDS pure white	514439	⊕	48,20
Mounting ring for hollow ceiling with retaining clips to be used with SR-MDS	627825	⊕	6,50



## Valve adapters/enclosure protection SAB05

Various valve adapters are available for adapting SAB to valves from different manufacturers. Additional types on request.

To protect the SAB05 wireless valve actuator, we offer battery protection as well as dismantling protection.



Valve adapters			AS1
Item description	Item no.	On stock	€
Valve adapter SAB for Giacomini Z810 (22,6mm)	634724	⊕	12,40
Valve adapter SAB for Oventrop Z809 (M30x1,0)	611978	⊕	12,40
Valve adapter SAB for Danfoss Z807	595070	⊕	12,40
Valve adapter SAB for Danfoss RS2000 Z802	589093	⊕	12,40
Valve adapter SAB for Danfoss RAV Z803	589109	⊕	12,40
Valve adapter SAB for Danfoss RAV-L Z804	589116	⊕	12,40
Valve adapter SAB for Danfoss Z800	589079	⊕	12,40
Valve adapter SAB for Danfoss Z801	589086	⊕	12,40
Valve adapter SAB for Danfoss Z805	615181	⊕	12,40
Further valve adapters on request			

Enclosure protection			AS1
Item description	Item no.	On stock	€
Battery protection SAB05, type Z220	595612	⊕	18,50
Dismounting protection SAB	595605	⊕	16,90



## Mounting

An extensive range of mounting accessories simplifies installation of our sensors. It includes mounting flanges for the various pocket diameters for use at different temperature ranges, com-

pression fittings for cable sensors, installation set for averaging temperature sensors and frost protection thermostats and tightening straps with contact fluid.



Mounting flanges			AS1
Item description	Item no.	On stock	€
Mounting flange MF2 (for frost protection thermostats)	435642	●	6,30
Mounting flange MF6DS flexible (suitable for Ø=6 mm)	669016	●	6,30
Mounting flange MF4 (brass)	102438	●	5,10
Mounting flange MF6 (brass)	3407	●	6,30
Mounting flange MF7 (brass)	102360	●	6,30
Mounting flange MF8 (VA)	103305	●	18,80

Compression fittings			AS1
Item description	Item no.	On stock	€
KL4VA - Compression fittings G 1/4" for Ø=4 mm with cutting ring VA, stainless steel	103206	●	12,70
KL6VA - Compression fittings G 1/4" for Ø=6 mm with cutting ring VA, stainless steel	103213	●	12,70

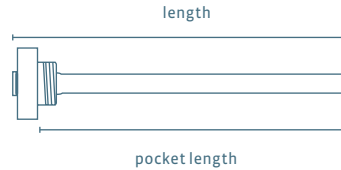
Installation sets			AS1
Item description	Item no.	On stock	€
Installation set TFR/MWF	458399	●	8,40
Mounting bracket with compression fitting for duct sensors Ø=6 mm	670593	●	12,00

Tightening strap with contact fluid			AS1
Item description	Item no.	On stock	€
Tension clamp for pipes Ø up to 110 mm with contact fluid	658911	●	1,65
Tension clamp for pipes Ø up to 250 mm with contact fluid	648103	●	3,10
Tightening strap PA for pipes Ø up to 100 mm with contact fluid	668071	●	1,65
Syringe thermal contact fluid	102308	●	1,40



## Thermowell pockets

For using our sensors in liquid media thermowell pockets are available for the standard mounting lengths made of brass and stainless steel, also without silicone if necessary.



Accessories – thermowell pockets brass for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
MS-thermowell pocket 50 mm type THMSDS50	50 mm	36 mm	610995	⊕	7,85	
MS-thermowell pocket 100 mm type THMSDS100	100 mm	86 mm	611008	⊕	8,95	
MS-thermowell pocket 150 mm type THMSDS150	150 mm	136 mm	611015	⊕	9,45	
MS-thermowell pocket 200 mm type THMSDS200	200 mm	186 mm	611022	⊕	9,75	
MS-thermowell pocket 250 mm type THMSDS250	250 mm	236 mm	611985	⊕	11,30	
MS-thermowell pocket 300 mm type THMSDS300	300 mm	286 mm	611039	⊕	11,60	
MS-thermowell pocket 450 mm type THMSDS450	450 mm	436 mm	611046	⊕	11,80	

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=6 mm						AS2
Item description	Length	Pocket length	Item no.	On stock	€	
VA-thermowell pocket 50 mm type THVADS50	50 mm	36 mm	611152	⊕	17,10	
VA-thermowell pocket 100 mm type THVADS100	100 mm	86 mm	611817	⊕	18,90	
VA-thermowell pocket 150 mm type THVADS150	150 mm	136 mm	611824	⊕	20,30	
VA-thermowell pocket 200 mm type THVADS200	200 mm	186 mm	611848	⊕	21,40	
VA-thermowell pocket 250 mm type THVADS250	250 mm	236 mm	611862	⊕	26,60	
VA-thermowell pocket 300 mm type THVADS300	300 mm	286 mm	611879	⊕	27,80	
VA-thermowell pocket 450 mm type THVADS450	450 mm	436 mm	611893	⊕	28,70	
VA-thermowell pocket 600 mm type THVADS600	600 mm	586 mm	611923	⊕	35,20	
Pressure screw with sealing PTFE (without silicone) for thermowell pocket THVADS (10 pcs)			666473	⊕	18,20	

Accessories – thermowell pockets stainless steel for sensors with pocket Ø=8 mm						AS2
Item description	Length	Item no.	On stock	€		
VA thermowell pocket 100 mm type THVA100 (KFK03)	100 mm	584180	⊕	27,00		
VA thermowell pocket 150 mm type THVA150 (KFK03)	150 mm	584197	⊕	28,30		
VA thermowell pocket 200 mm type THVA200 (KFK03)	200 mm	584203	⊕	29,90		
VA thermowell pocket 250 mm type THVA250 (KFK03)	250 mm	594738	⊕	31,40		



## Bonded pockets

For the use of our immersion temperature sensors in systems with high pressure bonded pockets are available.

Accessories - bonded pockets					AS1
Item description	Length	Pocket length	Item no.	On stock	€
Bonded pocket St52-3 type ESH110	110 mm	100 mm	103459	☉	44,85
Bonded pocket St52-3 type ESH160	160 mm	150 mm	103466	☉	51,40
Bonded pocket St52-3 type ESH210	210 mm	200 mm	103473	☉	57,90
Bonded pocket St52-3 type ESH260	260 mm	250 mm	173247	☉	63,70



## Mounting



Our installation accessories simplify mounting our sensors. Suitable mounting flanges are available for our humidity sensors. For the duct hygrostat the wall holder provides a secure attachment.

Mounting flanges			AS1
Item description	Item no.	On stock	€
Mounting flange MF19 (for LON)	527705	☉	11,70
Mounting flange MF20	612562	☉	11,70

Enclosure Protection			AS1
Item description	Item no.	On stock	€
Rain protection PA6 white, for outdoor humidity sensor	587709	☉	5,80

Wall mounting			AS1
Item description	Item no.	On stock	€
Wall mounting for duct hygrostat	429030	☉	38,00



## Protection filters

The following replacement filters are available:

- Stainless steel, wire mesh – suitable for FTK +, FTA54 +
- PVDF – suitable for FP / FTP
- PTFE – suitable for FSK01

Filter elements			AS1
Item description	Item no.	On stock	€
Filter stainless steel, wire mesh (spare part)	231169	●	8,80
Filter PVDF (spare part)	118583	●	20,50
PTFE filter	429054	●	41,70



## Gases

We offer accessories for our air pressure and display units:

- Metal duct connectors – suitable for connection to air ducts
- Adapter 90° angle – suitable for all pressure hoses  $\varnothing=4$  mm
- T-hose connector – suitable for the connection of several devices (pressure hoses  $\varnothing = 4$  mm)
- Mounting bracket differential pressure switch – suitable for PS



<b>Duct connectors</b>				AS1
Item description	Length	Item no.	On stock	€
Adapter 90° angle for pressure hoses $\varnothing=4$ mm		668330	⊕	8,00
Metal duct connectors MKS40	40 mm	265138	⊕	4,00
Metal duct connectors MKS100	100 mm	302531	⊕	4,80

<b>Pressure hoses</b>				AS1
Item description		Item no.	On stock	€
T-hose connector for pressure hoses $\varnothing=4$ mm (10 pcs)		668323	⊕	29,90

<b>Mounting bracket</b>				AS1
Item description		Item no.	On stock	€
Mounting bracket differential pressure switch 110x80x20 mm		669009	⊕	3,50





## Fluids

We offer accessories for our water pressure sensors:

- Stainless steel and brass fitting sets – suitable for DPL
- Connection cable 5 m with plug – suitable for DLF/DPL
- Connection adapter G1/4" to G1/2" – suitable for DLF
- Mounting bracket differential pressure transmitter – suitable for DPL



Screw Connection Kit			AS1
Item description	Item no.	On stock	€
Screw connection set Ø=6 mm stainless steel (2 pcs.)	373388	⊕	56,50
Screw connection set Ø=6 mm brass (2 pcs.)	373401	⊕	13,30
Screw connection set Ø=8 mm stainless steel (2 pcs.)	373395	⊕	64,90
Screw connection set Ø=8 mm brass (2 pcs.)	373418	⊕	13,40

Connection wires			AS1
Item description	Item no.	On stock	€
Connection wire DLF/DPL – connection plug and wire 5 m	668309	⊕	12,50

Adapters			AS1
Item description	Item no.	On stock	€
Connection adapter G 1/4" to G 1/2"	277068	⊕	8,90

Mounting bracket			AS1
Item description	Item no.	On stock	€
Mounting bracket differential pressure transmitter 40x40x60 mm	663892	⊕	8,90

## » Sensor Characteristics

Temp. °C	PT100 Ohm	PT1000 Ohm	Ni1000 Ohm	Ni1000 TK5000 Ohm	KTY81-110 Ohm	KTY81-121 Ohm	KTY81-122 Ohm
-50	80,31	803,10	743,00	790,88	515	505	525
-40	84,27	842,70	791,00	830,83	567	557	577
-30	88,22	882,20	842,00	871,69	624	614	634
-20	92,16	921,60	893,00	913,48	684	674	694
-10	96,09	960,90	946,00	956,24	747	737	757
0	100,00	1.000,00	1.000,00	1.000,00	815	805	825
10	103,90	1.039,00	1.056,00	1.044,79	886	876	896
20	107,79	1.077,90	1.112,00	1.090,65	961	951	971
25	109,74	1.097,40	1.141,00	1.113,99	1.000	990	1.010
30	111,67	1.116,70	1.171,00	1.137,61	1.040	1.030	1.050
40	115,54	1.155,40	1.230,00	1.185,71	1.122	1.112	1.132
50	119,40	1.194,00	1.291,00	1.234,97	1.209	1.199	1.219
60	123,24	1.232,40	1.353,00	1.285,44	1.299	1.289	1.309
70	127,07	1.270,00	1.417,00	1.337,14	1.392	1.382	1.402
80	130,89	1.308,90	1.483,00	1.390,12	1.490	1.480	1.500
90	134,70	1.347,00	1.549,00	1.444,39	1.591	1.581	1.601
100	138,50	1.385,00	1.618,00	1.500,00	1.696	1.686	1.706
110	142,29	1.422,00	1.688,00	1.556,98	1.805	1.795	1.815
120	146,06	1.460,60	1.760,00	1.615,36	1.915	1.905	1.925
130	149,82	1.498,20	1.853,00	1.675,18	2.023	2.013	2.033
140	153,58	1.535,80	1.909,00	1.736,47	2.124	2.114	2.134
150	157,31	1.573,10	1.987,00	1.799,26	2.211	2.201	2.221

Temp. °C	KTY81-210 Ohm	FeT Ohm	LM235Z mVolt	BALCO 500 OHM	NTC 1,6K OHM	NTC1,8k Ohm	NTC2,2K OHM
-50	1.030	-	-	382,1	-	-	-
-40	1.135	-	2.332	399,8	53.370	40.375	73.060
-30	1.247	1.934,70	2.432	418,0	28.173	22.906	38.550
-20	1.367	2.030,41	2.532	435,6	15.489	13.477	21.200
-10	1.495	2.127,68	2.632	453,3	8.840	8.198	12.110
0	1.630	2.226,53	2.732	471,0	5.222	5.141	7.162
10	1.772	2.327,01	2.832	488,7	3.184	3.315	4.372
20	1.922	2.429,15	2.932	497,3	1.999	2.193	2.747
25	2.000	2.480,86	2.982	506,3	1.600	1.800	2.200
30	2.080	2.533,00	3.032	523,6	1.289	1.486	1.773
40	2.245	2.638,60	3.132	541,3	851,9	1.028	1.173
50	2.417	2.745,99	3.232	558,5	576,1	726	793
60	2.597	2.855,23	3.332	576,2	397,9	522	548
70	2.785	2.966,36	3.432	593,4	280,2	382	386
80	2.980	3.079,42	3.532	610,6	200,9	284	276
90	3.182	3.194,47	3.632	627,8	146,5	214	201
100	3.392	3.311,56	3.732	645,1	108,5	164	149
110	3.607	3.430,75	3.832	662,3	81,5	127	112
120	3.817	3.552,09	3.932	679,1	62,1	99	85
130	4.008	3.675,65	-	696,3	47,9	-	66
140	4.166	3.801,48	-	713,1	37,4	-	51
150	4.280	3.929,65	-	-	29,5	-	40

Temp. °C	NTC3K OHM	NTC 3,3K OHM	NTC 5K OHM	NTC 5,369 OHM	NTC-SAT OHM	NTC 10K KOHM	NTC 10K PRE KOHM
-50	-	-	333.914,00	-	-	667,83	-
-40	102.690	109.600	167.835,50	116.300	9.709	335,67	239,80
-30	53.730	57.820	88.341,50	66.190	9.462	176,68	135,20
-20	29.346	31.800	48.487,00	39.100	9.063	96,97	78,91
-10	16.674	18.160	27.649,00	23.890	8.468	55,30	47,54
0	9.822	10.740	16.325,40	15.060	7.658	32,65	29,49
10	5.976	6.558	9.951,75	9.778	6.665	19,90	18,79
20	3.750	4.121	6.246,85	6.517	5.573	12,49	12,26
25	3.000	3.300	5.000,00	5.369	5.025	10,00	10,00
30	2.417	2.660	4.028,00	4.449	4.493	8,06	8,19
40	1.598	1.759	2.662,45	3.104	3.519	5,32	5,59
50	1.081	1.190	1.800,50	2.209	2.704	3,60	3,89
60	747,3	822	1.243,55	1.600	2.059	2,49	2,76
70	526,8	579	875,80	1.178	1.566	1,75	1,99
80	378,3	415	628,09	880,5	1.198	1,26	1,46
90	276,3	302	458,06	666,6	925	0,92	1,08
100	204,9	224	339,32	510,3	725	0,68	0,82
110	154,2	168	255,03	393,6	577	0,51	0,62
120	117,7	128	194,30	305,2	468	0,39	0,48
130	90,9	98	149,91	238,9	386	0,30	0,38
140	71,1	77	117,04	188,4	325	0,23	0,30
150	56,2	60	92,40	150,2	278	0,18	0,24

Temp. °C	NTC10-CAREL OHM	NTC12K OHM	NTC20k kOhm	NTC30K OHM	NTC50K OHM	NTC100K OHM
-50	-	-	1.490,40	-	4.168.934	-
-40	186.796	396.422,72	803,20	1.219.114	2.033.606	3.216.000
-30	110.881	204.948,28	412,80	622.924	1.038.697	1.721.000
-20	67.683	111.626,16	220,60	331.871	553.243	955.400
-10	42.431	63.671,20	122,40	183.696	306.183	548.800
0	27.280	37.841,88	70,20	105.305	175.508	325.500
10	17.961	23.332,63	41,60	62.343	103.903	198.900
20	12.092	14.869,02	25,34	38.019	63.364	125.000
25	10.000	12.000	20,00	30.000	50.000	100.000
30	8.312	9.761,37	15,88	23.828	39.714	80.530
40	5.826	6.582,83	10,21	15.317	25.529	53.140
50	4.159	4.548,87	6,71	10.079	16.799	35.860
60	3.020	3.213,88	4,51	6.778	11.297	24.690
70	2.228	2.317,13	3,10	4.651	7.750,9	17.330
80	1.668	1.701,83	1,82	3.251	5.418,7	12.830
90	1.266	1.271,35	1,54	2.313	3.854,8	8.996
100	974	964,72	1,11	1.673	2.787,2	6.636
110	758	742,67	0,81	1.228	2.046,1	4.966
120	597	579,39	0,60	915	1.523,4	3.766
130	475	457,60	0,45	-	1.149,5	2.892
140	382	365,57	0,34	-	878,2	2.247
150	310	-	0,27	-	678,8	1.766

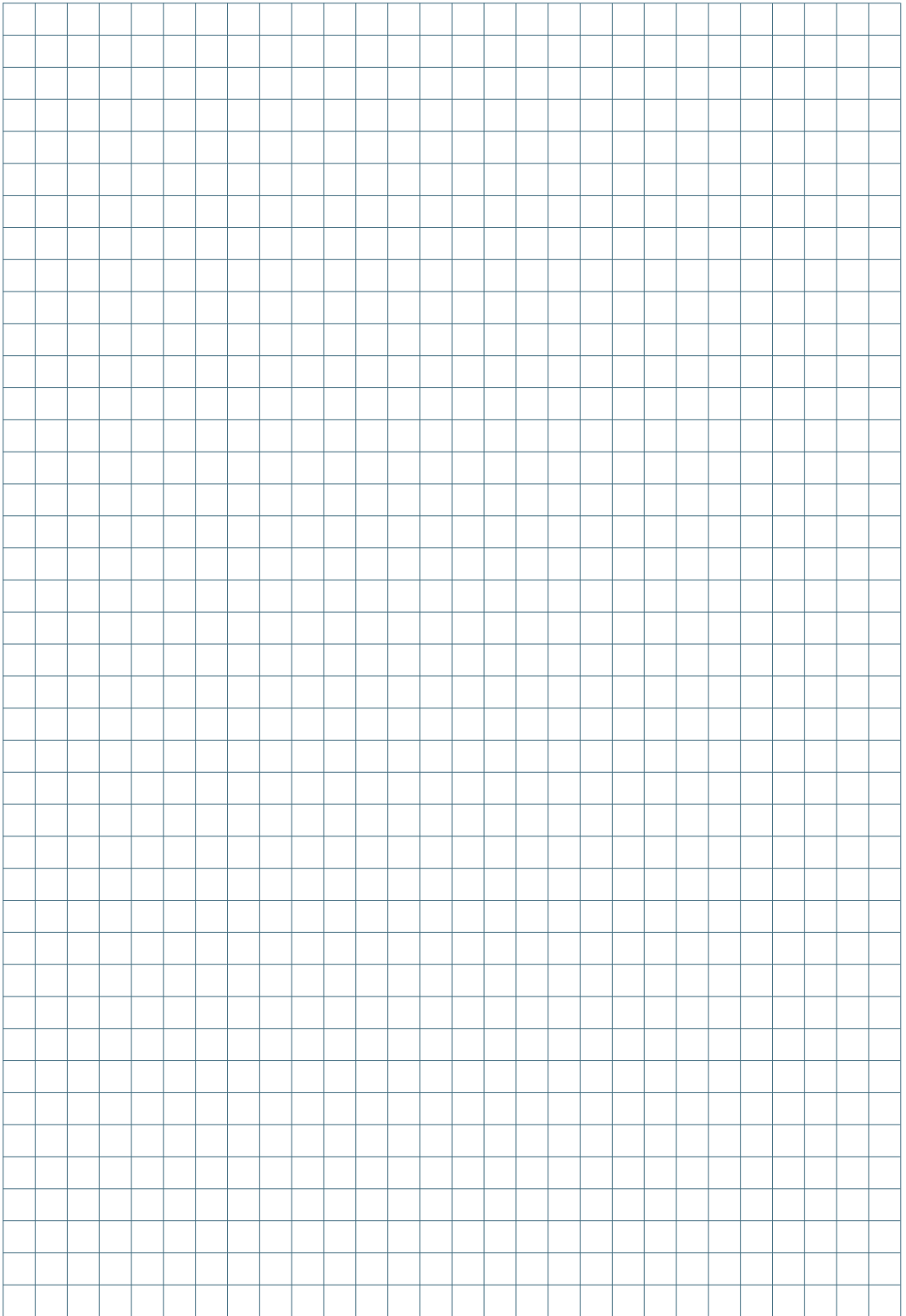
## » Switch ranges for flush mounted devices

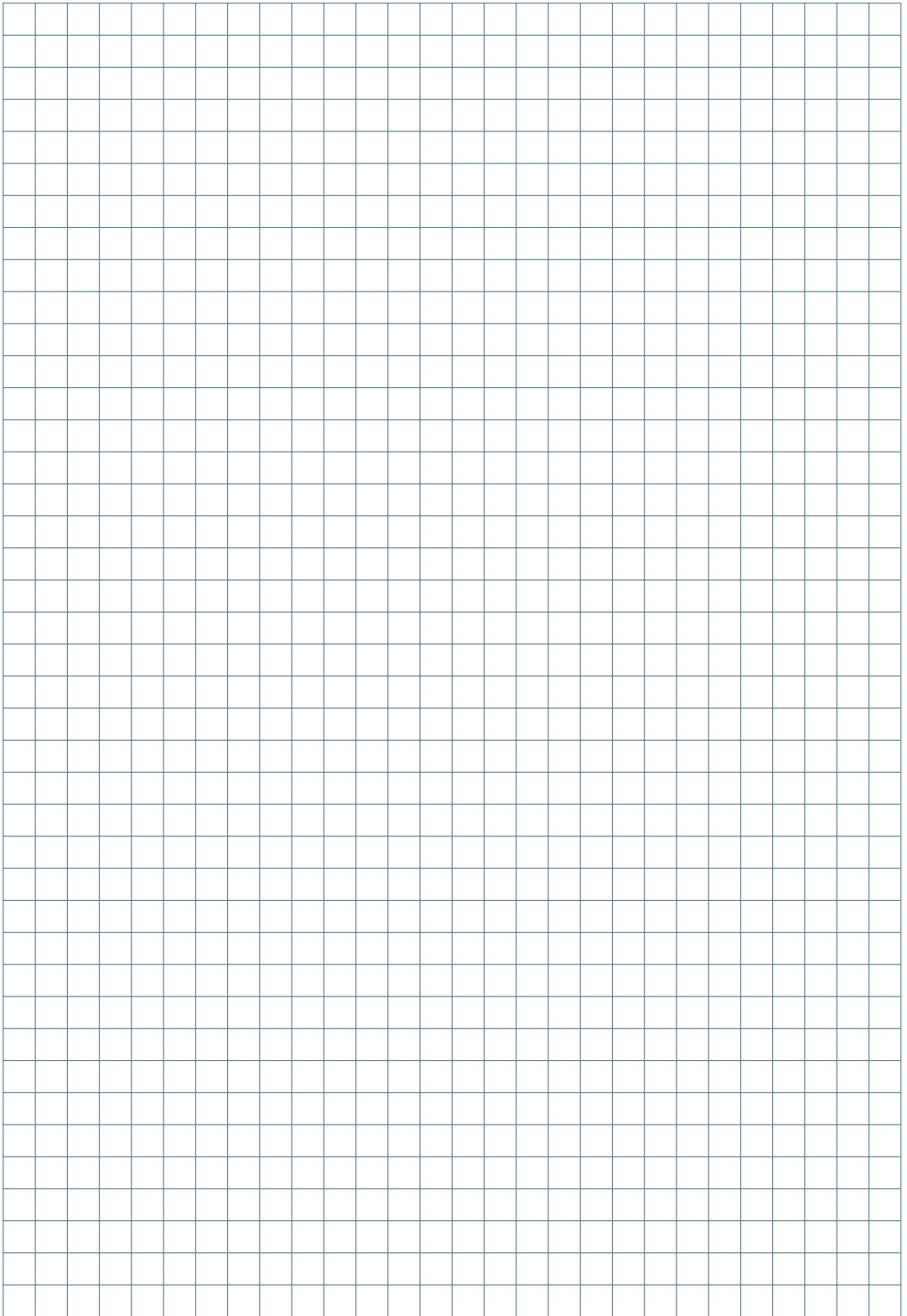
Type	Dimensions (WxH)	Price class	Colours	SR06 LCD	SR07 / SR07 P	WRF06 CO2/LCD	FTW06	WRF06 / WRF06I	WRF07	Radio switches
<b>Berker</b>										
Berker S.1	55x55	1	polar white (b/m), white, anthracite, red	•	•	•	•	•	•	•
Berker B.3	55x55	3	polar white (b/m), anthracite	•	•	•	•	•	•	•
Berker B.7	55x55	3	polar white (b/m), anthracite, alu painted	•	•	•	•	•	•	•
Berker Q.1	60x60	2	polar white (b/m), anthracite, red, green, orange	-	-	-	-	•	•	-
Berker Q.3	60x60	2	polar white (b/m), anthracite, red, green, orange	-	-	-	-	•	•	-
Berker K.1	72x57	2	polar wh. (b/m), anthracite, red, green, orange, yellow	-	-	-	-	•	•	-
Berker K.5	72x57	3	-	-	-	-	-	•	•	-
<b>Busch-Jaeger</b>										
Busch-balance® SI	55x55	1	alpin white	•	•	•	•	•	•	•
Busch-Duro 2000® SI	54x54	2	white	-	-	-	-	•	•	-
Reflex SI	54x54	1	alpin white	-	-	-	-	•	•	-
solo®	63x63	2	studio white (m), ivory white, yellow, grey metallic	•	•	•	•	•	•	•
future® linear	63x63	2	studio wh. (b/m), ivory wh., anthracite, alu silver, black	•	•	•	•	•	•	•
Impuls	-	2	studio white (m), yellow, green, blue, red, black	-	-	-	-	•	•	-
Busch-axcent®	63x63	2	studio white (m), yellow, green, blue, red, black	•	•	•	•	•	•	•
alpha nea®	70x56	2	studio white (b&m), ivory white	-	-	-	-	•	•	-
<b>Gira</b>										
E2 (System55)	55x55	1	pure white (b/m), alu, anthracite	•	•	•	•	•	•	•
E3	55x55	1	various colours	•	•	•	•	•	•	•
Standard 55 (Syst55)	55x55	2	pure white (b/m), creme white	•	•	•	•	•	•	•
Esprit (System55)	55x55	4	various colours	•	•	•	•	•	•	•
Event (System55)	55x55	2	various colours	•	•	•	•	•	•	•
F100	71x71	2	pure white (b), brilliant chrome, brass, platin	•	•	•	•	•	•	•
<b>Jung</b>										
LS 990 plastic	70x70	2	white, alpin white, black, light grey	-	-	•	•	•	•	•
A 500	55x55	1	alpin white, alu (painted), black	•	•	•	•	•	•	•
AS 500/AS 500 antib.	55x55	2	white, alpin white	•	•	•	•	•	•	•
A Plus	55x55	2	alpin white, alu (painted), anthracite, blue	•	•	•	•	•	•	•
ACreation	55x55	2	alpin white, alu, anthracite, black, champagne, mokka	•	•	•	•	•	•	•
CD 500	67x67	2	white, alpin white, black, grey, light grey, brown	-	-	•	•	•	•	-
<b>Merten</b>										
M-Smart	55,4x55,4	1	white (b/m), polar wh. (b/m), active wh. (b), anthracite	•	•	•	•	•	•	•
M-Arc	55,4x55,4	2	white (b/m), polar wh. (b/m), active wh. (b), anthracite	•	•	•	•	•	•	•
M-Plan	55,4x55,4	2	wh. (b/m), polar wh. (b/m), active wh. (b), alu, anthracite	•	•	•	•	•	•	•
1-M	55,4x55,4	2	white (b), polar white (b), active white (b)	-	-	•	•	•	•	•
Atelier-M	55,4x55,4	2	white (b), polar white (b), active white (b)	-	-	•	•	•	•	•
M-Pure	55,4x55,4	2	wh. (b/m), polar wh. (b/m), active wh. (b), alu, anthracite	•	•	•	•	•	•	•
Artec	66,3x66,3	2	white, polar wh. (m), light grey, dark brasil, grey black	-	-	•	•	•	•	•
Artec stainless steel	66,3x66,3	3	-	-	-	•	•	•	•	•
Antik	66,3x66,3	2	white (m), polar white (m), dark brasil, antique brass	-	-	•	•	•	•	•
<b>Peha</b>										
Aura	55x55	2	pure white alu (painted), anthracite	-	-	•	•	•	•	•
Aura glass frame	55x55	3	matt-pure white, clear-alu, matt-mintgreen...	-	-	•	•	•	•	•

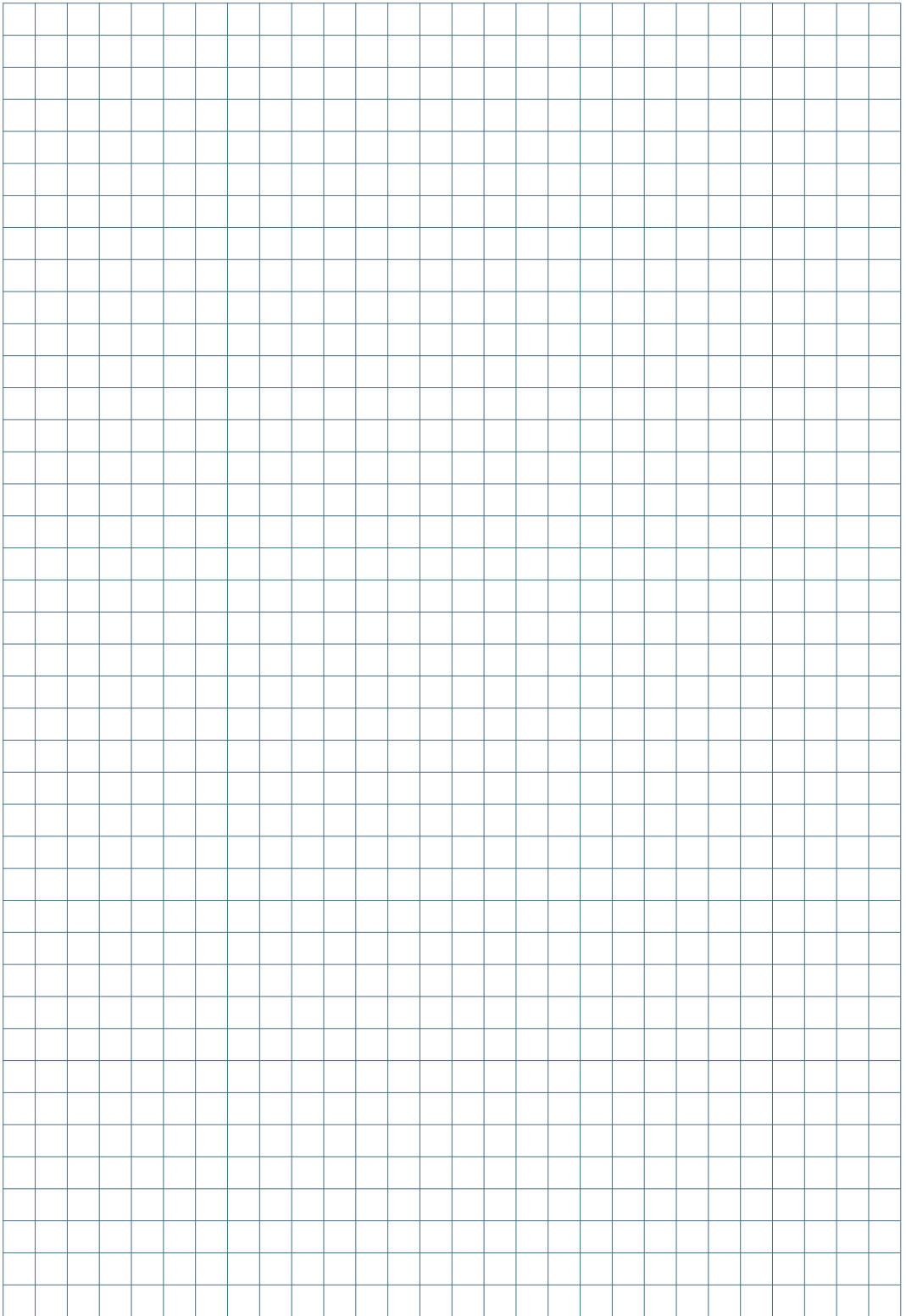
Price classes: 1 - price equal to Gira E2  
2 - other switch ranges

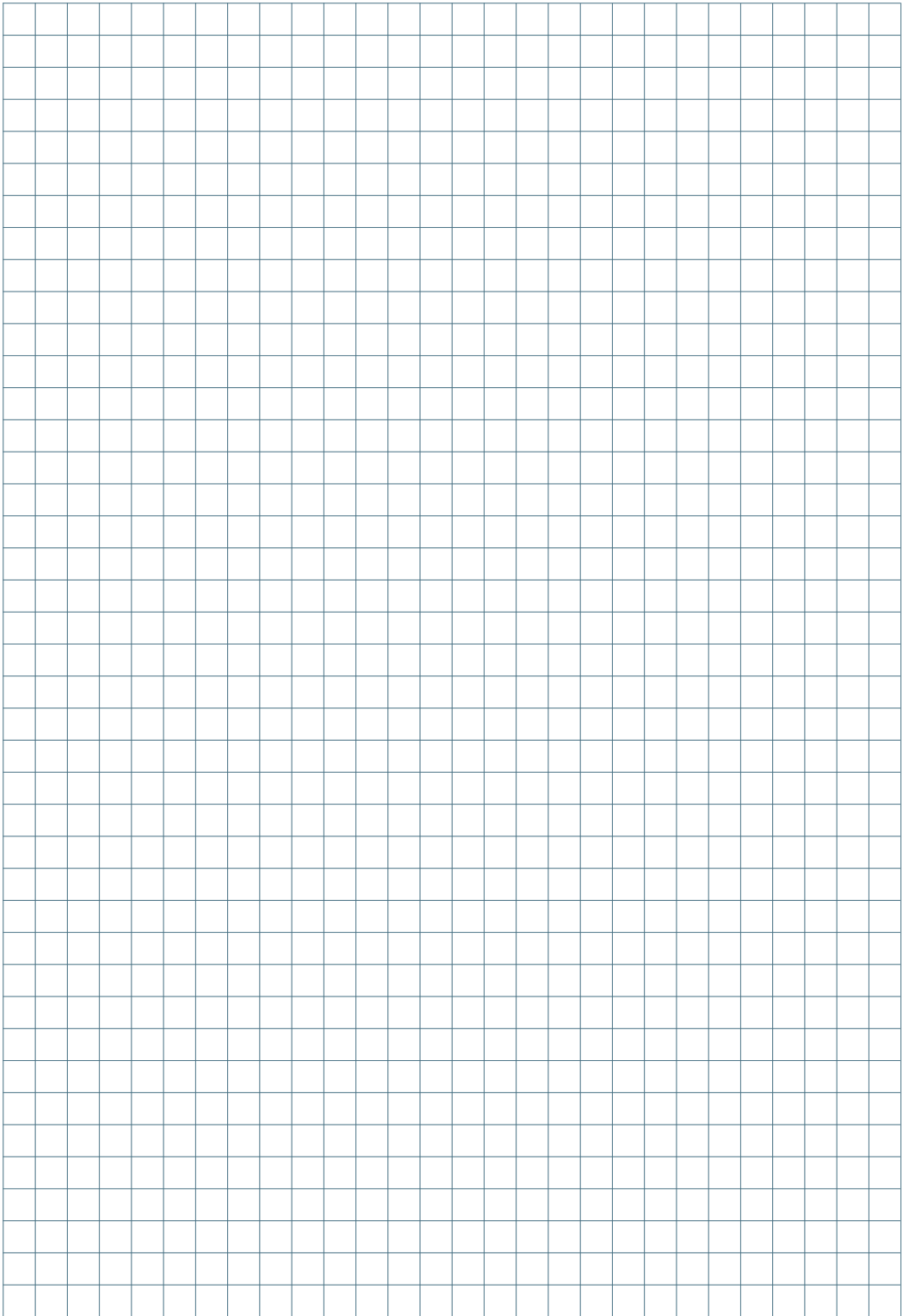
3 - stainless steel | glass | aluminium  
4 - Gira Esprit

b = brilliant  
m = matt

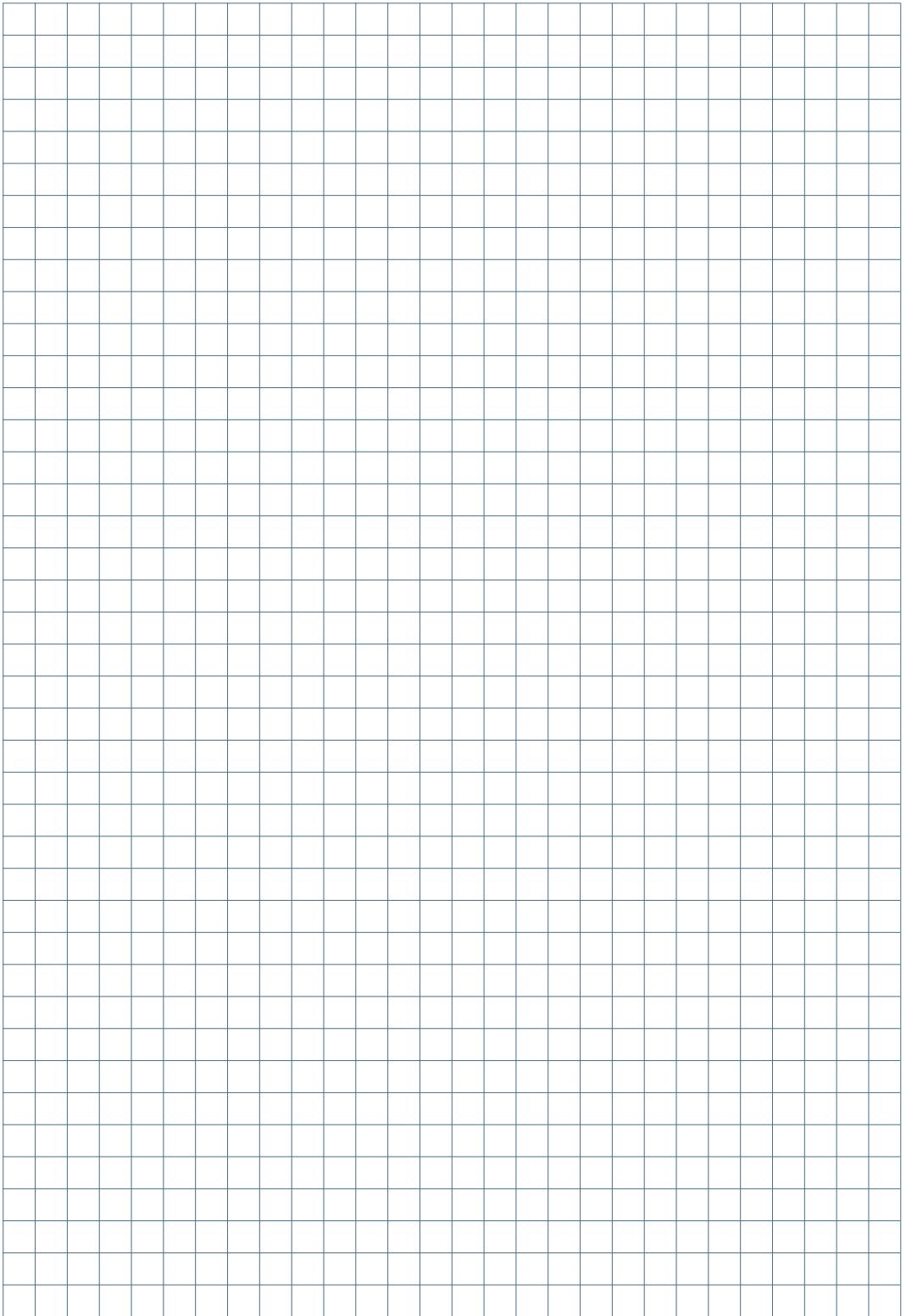












# Glossary



## OUTPUTS

<b>A, AA, 2A</b>	1 resp. 2 outputs 4..20 mA; output values depending on product
<b>V, VV, 3xV, 4xV or 2V, 3V, 4V</b>	1, 2, 3, 4 outputs 0..10 V; output values depending on product
<b>AS, AAS, VS, VVS</b>	1 resp. 2 active outputs + 1 passive output temperature (S)
<b>TRA</b>	output 4..20 mA, digit for measuring range temperature following
<b>TRV</b>	output 0..10 V, digit for measuring range temperature following
<b>TRA1/TRV1</b>	range -50..+50 °C
<b>TRA2/TRV2</b>	range -10..+120 °C
<b>TRA3/TRV3</b>	range 0..+50 °C
<b>TRA4/TRV4</b>	range 0..+160 °C
<b>TRA5/TRV5</b>	range 0..+250 °C
<b>TRA6/TRV6</b>	range 0..+400 °C
<b>TRA7/TRV7</b>	range 0..+600 °C
<b>TRA8/TRV8</b>	range -15..+35 °C
<b>MultiRange</b>	range adjustable at the device

## SI-PROTECTION

Changes in temperature are causing formation of humidity. Thus, there is a risk that the humidity can permeate in the contact point of the sensor. As a result, the sensor would corrode and oxygenate. Thus, the contact point would become unreliable. The SI-Protection procedure provides the contact point with epoxy gum and a fluidized bed coating which unites with the insulation material of the wire. Thus, a complete unit is built protecting the sensor against vibrations and humidity.



## DUAL CHANNEL – SELF CALIBRATION

Dual Channel self calibration utilizes an independent 2nd optical beam to compare and reference the measuring beam. Because the 2nd beam is used only once a day it will wear off much less resulting in a negligible error. Contrary to products using the commonly used ABC-Logic™, dual channel sensors can be used for all applications including hospitals, casinos, horticulture and livestock etc, which are in use 24/7.

## COMMUNICATION

<b>EasySens®</b>	Thermokon radio based on EnOcean IEC 14543-3-10
<b>BACnet</b>	BACnet MS/TP, communication protocol specifically designed for building automation; BACnet IP, if mentioned in catalogue
<b>KNX</b>	EIB-KNX interface
<b>LON</b>	LON FTX, communication protocol specifically designed for building automation; other standards, if mentioned in catalogue
<b>Modbus</b>	RS485 Modbus RTU
<b>dS</b>	digitalSTROM

## ROOM OPERATING UNITS OPERATING ELEMENTS

<b>P</b>	potentiometer (setpoint adjustment)
<b>MS</b>	slide switch
<b>S</b>	switch (e.g. for fan stages)
<b>T</b>	button (e.g. for occupancy status)
<b>D</b>	LED
<b>LCD</b>	inclusive display
<b>TLF</b>	traffic light showing air quality (3 LEDs)
<b>AZ</b>	Automatic zero-point calibration

# TERMS AND CONDITIONS

## Orders

We will happily take your order by phone, email or fax, stating the product name and item number from the catalogue. Please do not hesitate to contact us for technical support or support with specific applications or sensor technology.

## Delivery Time

We stock a variety of standard sensors in limited quantities, of which delivery is within 1 week, often immediately after receipt of order. Delivery times for larger quantities or custom designs available on request.

## Pricing

All prices are list prices in € and do not include value added tax. Prices are valid from 1<sup>st</sup> April 2017. All previous prices are invalid.

## Delivery Conditions

Delivery is done ex works by parcel or forwarding service, excluding cost for packing / insurance.

## Terms of Payment

Within 14 days net.

## Product return

Catalogue products can be returned within a period of 6 months after delivery for 2/3 credit of the initial purchase price. Only unused products in original packing will be accepted. Custom manufactured products such as room sensors with control elements, custom engraving, custom varnish or custom printing can not be returned.

**Our general business and warranty conditions are available on [www.thermokon.com](http://www.thermokon.com) or can be send to you on request. Subject to technical and price modifications; no responsibility is accepted for the accuracy of this information. Illustrations may vary.**

## 5 YEARS WARRANTY ON ALL PRODUCTS!



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